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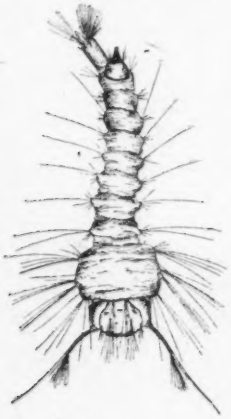

Larva of Culex perturbans as described by Dr. John B. Smith.

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ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XX. APRIL, 1909. No. 4.

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Notes and Descriptions of Crabronidae.

BY S. A. ROHWER, Boulder, Colorado.

Rhopalum modestum Roh. [ENT. NEWS, June 1908, p 257].

I have seen two males of this species from Milwaukee Co., Wisconsin, July 27, 1907. They belong to the Public Museum of Milwaukee and bear the number 25,492. They differ from the type as follows: The middle lobe of the clypeus is not so acute and is broader; and the scape is entirely yellow.

♀. Length 6 mm. More robust than the male. Anterior margin produced in the middle into an acute narrow tooth, with a small, distinct, sharp tooth laterally. Distance between the eyes at the clypeus not as great as the width of the clypeus, counting the middle lobe. Space between the antennae distinctly greater than the space between the antennae and the eye margin. Fourth joint of the antennae twice or a little more than twice as long as the third and distinctly longer than the fifth; second and third joints of equal length; antennae simple. Furrow from lower ocellus not very strong. Depressions near lateral ocelli about the same as in *R. pedicellatus* Pack. Distance between the lateral ocelli about the same as that to the nearest eye margin; ocelli in a triangle. A low raised carina in the middle of dorsulum. Head and thorax shining, with rather close fine punctures. Metathorax without a basal enclosure; with a distinct, deep, longitudinal furrow, which broadens on the posterior face; sides of posterior face bounded by

strong carinæ. Legs robust; posterior tibiae clavate toward apex; four posterior tibiae slightly spinose, the posterior one being serrated also. Abdomen shining, highly polished. Petiole grooved above basally; the node glabrous; petiole in front of the node not quite as long as the second segment. Pygidium excavated, narrowed apically; apex rounded. Black; mandibles piceous; scape in front, tubercles, anterior legs below apex of femora, four posterior knees and intermediate tarsi *yellow;* trochanters brownish; tegulæ testaceous. Wings clear hyaline, iridescent, venation black.

A female belonging to the Public Museum of Milwaukee, collected in Milwaukee Co., Wis., Aug. 12, 1907. No. 24,301.

This species is near to *R. pedicellatus* Pack, but the longer third antennal joint; the absence of the basal enclosure of the metathorox, and the black coxae will separate it at once in the female sex. The male was separated in the original description.

I have bred this species from pupæ in old stems of the cultivated currant (*Ribes*). A ♂ hatched April 27, 1907.

Crabro (**Protothyreopus** Ashm.) **dilectiformis** n sp.

♀. Length 14 mm.; width of head 3.5 mm. Robust, stout. Clypeus with a strong medial carina at the apex of which is an obtusely rounded tooth; the apical margin smooth, without hairs. Space between the eyes at the clypeus a little less than the width of the clypeus, including the rounded tooth. Facial basin smooth, shining. Third joint of the antennae equal to the length of the antennal joints 4 and 5. Ocelli in a low triangle. Space between the lateral ocelli less than the distance from one of them to the nearest eye margin. There is a faint indication of a carina from between the lateral ocelli to the occiput, it is much stronger between the ocelli than elsewhere. Head rather finely, closely punctured, the punctures are sparser on the cheeks and occiput. Pronotum in front strongly, longitudinally striated; not very strongly, but distinctly ridged anteriorly, dentate laterally; broken in the middle. Dorsulum rather coarsely, closely punctured, the punctures becoming a little sparser posteriorly. Mesopluræ above striate, below striato-punctate. Scutellum striato-punctate. Postscutellum sparsely punctured. Metanotum coarsely, longitudinally striated; with a deep central furrow, posterior face not so coarsely or closely, transversely striated, with a deep central furrow. Metaplurae finely, transversely striated, more coarsely so anteriorly. Anterior femora triangular, keeled above posteriorly. Four posterior tibiae serrate. First recurrent nervure a little more than half the length of the first transverse cubitus basad of the cubitus. Abdomen closely punctured, first segment more strongly

and sparsely so, last ventral segment strongly punctured. Pygidium triangular, slightly depressed apically; strongly punctured. Black; mandibles (apices piceous), scape, two large spots on the pronotum, tubercles, elongate spot beneath tegulæ, two small spots in front of the scutellum, postscutellum, elongate spots on the first three dorsal abdominal segments, bands on the fourth and fifth, *yellow*. Tegulæ femora beneath *rufo-testaceous;* apices of femora above, tibiae and tarsi *yellow,* apices of tarsi infuscated. Wings smoky-yellowish; venation testaceous.

Habitat.—Milwaukee, Co., Wis., Aug. 13, 1905. Type in the Public Museum of Milwaukee.

In my table for the females of this group (Ent. N. June, 1908, p. 250) this species runs to *dilectus* cress., but the striato-punctate scutellum and the reddish femora separate it at once from this species. *Bigeminus* Pack., *dilectus* Cress. and *dilectiformis* Roh. may be grouped together because in the female sex the pygidium is slightly, but noticeably depressed apically. They may be separated as follows:

Scutellum striato-punctate (femora partly rufous; metathorax black. **dilectiformis** Roh.

Scutellum punctured . . . . . 1.

1. Metothorax without a yellow spot; basal half of femora black. **dilectus** Cress.

Metathorax with a large yellow spot; femora pale beneath..**bigeminus.**

Crabro banksi n. sp.

♀. Length about 9.5 mm. Anterior margin of the clypeus semicircular, not produced or emarginate; carina evident, but not strong. Space between the eyes at the clypeus about the same as the width of the clypeus in the middle. Facial basin thickly covered with pubescence, with a shining, longitudinal line in the middle; not sharply defined above. Interorbital foveae present, elongate, but not strongly defined. Ocelli in a low triangle; distance between the hind pair equal to or slightly greater than the distance between one of them and the nearest eye margin. Below the ocelli the head is closely punctured with medium size, distinct punctures; above the ocelli the punctures are larger and rather widely separated. Antennae with short, rather sparse silvery pile; the third joint a little shorter than joints 4 and 5. Pronotum short, with a very weak transverse carina anteriorly; not dentate laterally. Dorsulum compactly, rather coarsely punctured, three longitudinal carinae anteriorly, the middle one the weakest. Scutellum with large, punctures, separated anteriorly, confluent in places posteriorly. Mesoplurae distinctly striato-punctate. Metanotum rather finely,

obliquely, irregularly striated, a middle channel which is foveolated. Posterior face separated from the metanotum by a somewhat indistinct fovea; bounded laterally by faint carinae; a triangular fovea; rather finely rugose. Metaplurae very finely transversely striated. Legs normal; hind basitarsus as long as the remaining tarsi. First dorsal abdominal segment with large separated punctures; second and third dorsal segments with smaller more widely separate punctures, those on the third segment smaller and fewer; the remaining dorsal segment with smaller, sparser punctures. All the ventral segments with a transverse punctured, apical line, apical segment with close large punctures. Pygidium deeply channeled, excavated posteriorly, with a lateral fringe of stiff hair. Color black; spot on mandibles, scape and pedicellum, two transverse spots on the pronotum, tubercles, spot under the wings, spots on the lateral, anterior corners of the scutellum, postscutellum, stripe on the four anterior tibia outwardly, posterior tibia except apex, tarsi, lateral spots on second, third and fourth dorsal segments, a band on the dorsal fifth, *yellow;* tegulae testaceous. Wings sub-hyaline; venation brown. Clypeus and facial basin with silvery pubescence; head and thorax with long grey hair.

Habitat.—Virginia, Glencarlyn, July 26; Great Falls, July 31. Type from Glencarlyn. Named after Mr. N. Banks, who collected the specimens.

This species seems to connect Fox's groups *scaber* and *chrysarginus*. The sculpture of the head is that characteristic of group *scaber,* while the lateral fringe of the pygidium is that of group *chyrsarginus*. In Fox's table it runs to 19, where it goes out because of the coarsely punctured head and fringe of the pygidium. If the pygidial fringe be discarded it would go to *stirpicolus* Pack., but it is not that species. If the sculpture of the head should be discarded it would go to *odyneroides* Cress., but is widely different from that species. *C. banksi* does not fit any of Ashmead's genera, but comes in with *Pseudocrabro* Ashm. and *Xylocrabro* Ashm.

Crabro (Protothyreopus) megacephalus Roh.

A ♂ from Florissant, Cal., June 14, 1903, on sand (S. A. Rohwer), seems to be the male of this species. It differs from the ♀ as follows:

Pronotum not so strongly dentate, but more keeled anteriorly and somewhat sharper at the angles; posterior face of metathorax more strongly transversely striated; mesoplurae more strongly striated; punc-

tures of abdomen sparser; not so strongly covered with pubescence. Length 8 mm.

The ♂ is related to *C. dilectus* Cress., but may be separated by the following characters:

Head and dorsulum not nearly so strongly sculptured; basin around lower ocellus and furrow from lower ocellus more distinct; mesoplurae more strongly striated; posterior face of metathorax more distinctly striated; punctures of abdomen finer.

Crabro (**Synothyreopus** Ashm.) **florissantensis** n. sp.

♂. Length 7 mm.; length of anterior wing 4.5 mm.; length of abdomen 4 mm. Slender. Head closely, rather finely punctured with a number of longitudinal striæ intermixed; at the top of each eye is a smooth area. Ocelli in a low triangle; the distance between the two lateral ones slightly less than the distance to the nearest eye margin. Antennae moniliform; apical joint decidedly longer than preceding. Clypeus slightly produced in middle, a small tooth at each side of this projection. Pronotum rounded, neither carinate or dentate. Anterior part of dorsulum finely, closely punctured with some large punctures intermixed; posterior part of dorsulum distinctly longitudinally striated. Scutellum very finely, longitudinally striated. Suture of mesoplurae foveate; sides of mesoplurae impunctate, or very finely punctured. Metanotum with a distinct longitudinal carina which extends on posterior face, above these are a number of rather irregular striae. Posterior face of metathorax bound by distinct ridges; divided in middle by the carina above mentioned. Metaplurae finely, closely, transversely striated; at the top there are a number of strong striae. Anterior trochanters not half as long as femora; anterior femora, flattened and strongly produced posteriorly, more strongly so at base, that produced part at the posterior basal angle has a stout hook; shield of anterior tibiae about a third wider than the length of the tibiae, about parallel-sided for the first third of the way then it tapers to an obtuse point. Venation normal. Abdomen long, slender, impunctate. Black; two spots on pronotum, scutellum, postscutellum, two spots of all the dorsal abdominal segments (forming a band of the first, fifth and sixth), spot of apex of anterior femora, and a line on anterior tibiae *yellow*. Apical third of shield brown, the rest greenish-brown, with many hyaline, round spots. Clypeus with silvery pubescence. Head and thorax covered with long black hair. Wings slightly dusky hyaline, venation pale brown.

Habitat.—Florissant, Colo., June 12, 1908, "on sand," (S. A. Rohwer).

This species is not closely related to any described American species. It seems nearest to *tumidus* Pack., but the sculpture of the head and thorax is different, the mandibles and scape are black and there are many other differences.

The particular fore femora would perhaps be ground for making a new subgenus for it, but I believe there are already more subgenera than are necessary.

Crabro (Thyreopus) lacteipennis n. sp.

♀. Length 8.5 mm. Rather slender. Anterior margin of the clypeus rounded out, not dentate or emarginate; no clypeal carina. Head with distinct somewhat separate punctures. Ocelli in a low triangle; the distance between lateral ocelli greater than the distance to the nearest eye margin; no furrow from the anterior ocellus. Scape long, so that the flagellum is not twice as long as it is; third antennal joint but little longer than the fourth. Pronotum rather long, not furrowed either transversely or longitudinally; lateral angles sharp, but hardly dentate. Dorsulum and scutellum with distinct, separate punctures. Mesoplurae with more widely scattered punctures, the furrow not foveolated. Metanotum with a shallow middle furrow, obliquely striated. Metaplurae finely striated; posterior face with a few indistinct transverse striae; fovea elongate distinct; lateral carinae not strong, hardly extending to the middle. Four hind tibiae rather strongly spinose on the outer margin. Venation as in *tumidus* Pack. Abdomen impunctate, rather elongate. Pygidium broad, triangular, rounded at the apex, covered with long hair. Color black; mandibles in middle and tegulae reddish, scape in front, two spots on pronotum, tubercles, spot on the anterior femora apically, all the tibiae exteriorly, postscutellum, wedge shape spots on all the abdominal dorsal segments, (the second and third sinuate), *whitish*. Clypeus, cheeks, and face above the level of the antennae with dense silvery pubescence; the rest of the insect nude. Wings milky-hyaline, iridescent; venation pale testaceous.

Habitat.—Unknown, but perhaps Denver, Colo. (S. A. Johnson).

This species should be known at once by the milky-pyaline wings. In Fox's table it falls near *tenuiglossus* and *tumidus*.

Crabro (Blepharipus) tridentatus n. sp.

♀. Length 7 mm. Anterior margin of the clypeus very slightly produced into the middle, with three distinct obtuse teeth; middle carina present but not strong. Eyes large, converging strongly towards the clypeus so they are quite as wide at the clypeus as the width of the clypeus in the middle. Head shining, with five scattered punctures.

Ocelli in an equilateral triangle; a very strong furrow from anterior ocellus. Facial basin not bounded by a carina. Superorbital fovea elongate, not parallel with the eye margin; deep, well defined. Third antennal joint distinctly longer than the fourth. Pronotum rounded, slightly notched in the middle. Dorsulum with small distinct punctures; longitudinally impressed in the middle, the impression with a longitudinal carina. Scutellum with a few elongate punctures posteriorly. Mesoplurae shining, with sparse punctures; furrow distinctly foveolated. Metanotum with two shining convexities, separated by a furrow which broadens at the postscutellum. Metaplurae shining, impunctate; posterior face shining, with an elliptical fovea; lateral ridges rather strong, extending above the middle. Legs and venation normal. First abdominal segment narrowed basally; abdomen shining, impunctate. Pygidium narrowed apically, basally with a few large punctures. Color black; scape beneath, line on pronotum, legs below femora and tips of anterior femora *bright yellow;* tegulae and apical margins of abdominal segments *testaceous.* Wings hyaline, iridescent, venation black. Clypeus, cheeks, and pectus with silvery pubescence.

♂. Length 6 mm. Clypeus more produced than in ♀ and with two small lateral teeth, on the produced portion; apex of produced portion rounded; carina almost wanting. Punctures of the head larger than in ♀. The scape is not as yellow, and the yellow on the pronotum has a tendency to divide; apex of the hind tibiae black. The testaceous bands of abdomen are wanting. Head and thorax clothed with fuscous pubescence.

Habitat.—Falls Church, Va. and Washington, D. C., May 30, June 16, July 19, Sept. 11 and 29. (N. Banks).

This species is very near *impressifrons* Sm., but the tridentate clypeus of the female, and the obtusely rounded produced portion of the male will at once separate it from that species.

Crabro (Lindemius) zellus n. sp.

♀. Length about 5 mm. Anterior margin of the clypeus broadly truncate, with two lateral teeth, the inner one the stronger; no carina. Mandibles simple at the apex. Head shining, with small punctures. Facial basin not bounded by a carina above. Superorbital fovea oblique, not strong. Ocelli in a low triangle, an impressed line above and below the anterior ocellus. Flagellum short, not twice the length of the scape. Pronotum lower than the dorsulum, transverse, sharply truncate before. Dorsulum shining, with distinct separate, small punctures; not impressed. Scutellum similarly sculptured. Mesopleurae, with small distinct punctures; furrow strongly foveolated, straight. Metanotum distinctly obliquely striated; separated from the posterior face by a

carina which in the middle extends down around the fovea of the posterior face. Metapleurae shining impunctate; posterior face finely punctured; lateral ridges well defined. Legs and venation normal. Abdomen shining, microscopically punctured. Pygidium broad triangular, punctured apically. Color black, mandibles (apices piceous), clypeus, scape, pedalicum beneath, tubercles, two spots on pronotum, spot on scutellum, four anterior legs below knees except a line within on middle tibiae, posterior tibiae at the base and their tarsi yellow. Wings hyaline, iridescent; venation black. Usual silvery pile.

Habitat.—Falls Church, Va., July 14. (N. Banks).

A distinct species, in Fox's table it runs to *flaviclypeus* Fox, but that species has the enclosure of the metathorax "divided by a very wide, longitudinal channel."

Crabro (Epicrossocerus) universitatis n. sp.

♀. Length 4 mm; length of anterior wing 3 mm. Anterior margin of the clypeus with a large lateral tooth; medially produced into to a broad, low lobe in the middle of which is an obtuse tooth. Seen from in front there is a sharp tooth at each side of the clypeus, below the eye margin. Seen from the side above the lower margin of the cheek, from the eye outward, is strongly keeled; this keel is wavy on the outer margin and presents three more or less distinct teeth. From lower ocellus extending downward to the clypeus and upward nearly to the occiput is a distinct furrow. At the upper inner eye margin there is a distinct ovate fovea. Ocelli in an equilateral triangle. Head shining, apparently very finely punctured. Pronotum slightly, but sharply, keeled anteriorly; angulate laterally, sides much straighter than usual. Dorsulum and scutellum finely closely punctured, not so shining as the head. Mesoplurae punctured like dorsulum; a circular fovaea in about the middle; episternal furrow nearly straight, not very strongly foveolated. Metathorax finely closely punctured, without an enclosed area or shining convexities; posterior face with a shallow rather broad fovea; suture between the postcutellum and the metathorax strongly foveolated. First rec. nervure in the middle of the first cubital cell. Anterior trochanters broadened apically, not quite half as long as their femora; posterior tibiae serrate on outer margin; first joint of posterior tarsi about equal to 2 plus 3 plus 4. Abdomen shining, impunctate. Pygidium narrowed apically, excavated; somewhat roughened.

Black; mandibles, except the rufous apex and scape, except above, yellow. Tegulae and all the tibiae and tarsi testaceous; the tibiae are somewhat brownish. Wings hyaline, strongly iridescent; venation black-brown. Clypeus with silvery pubescence, insect otherwise nude.

Habitat.—Campus of the University of Colorado, Boulder, Colo., July 25, 1908. (*T. D. A. Cockerell*).

The prothorax beneath has a sharp tooth at each lateral angle.

In Fox's Monograph on N. Am. Crabronidæ this species runs to *insolens* Fox (Colo.), but it differs from that species in the following characters: Space between the hind ocelli not greater than the distance to the nearest eye margin, if anything slightly less; there is a distinct impression extending to the lower ocellus; pronotum without a "strongly marked, transverse impression on each side," crest of pronotum not highest medially; larger size, etc.

C. *insolens* Fox is the type of Dr. Ashmead's genus *Epicrossocerus*. Dr. Ashmead apparently had not seen a ♀ of *insolens* as he only separated his genus, *Epicrossocerus,* from the males. Fox's type of *insolens* is a ♀, and as far as I know no male has been seen.

If *Epicrossocerus* Ashm. is to be recognized as a subgenus or section, and I think it may be separated from *Crossocerus* Lep. and Brul. by the narrowed and excavated pygidium of the ♀. The ♂ will probably be difficult to separate from the males of *Crossocerus*. *Epicrossocerus* is nearer *Blepharipus* Lep. and Brul. than it is to *Crossocerus*. It may be known from *Blepharipus* by the keeled pronotum, dorsulum without median depression, short abdomen, almost square head, and containing species of a smaller size.

During a brief stay in Thomasville this Christmas I was much surprised on December 26th to meet with a single specimen of *Heliconius charitonius,* flying through the pine woods. A year before, at about the same time, I met with *Megathymus yuccae,* flying about a portion of the golf course. Both of these records were very unexpected, as a few years ago I collected constantly for several seasons from November to April without finding the least trace of either of these species. Specimens of both species which I secured were so fresh that I can hardly believe they had come from any considerable distance. This season the fall weather had been particularly mild and many *Eudamus proteus, Dione vanillae, Catopsilia eubule* and other distinctly warm weather species were on the wing, and usually in good condition.—Morgan Hebard.

Migrations of Athena chiron Fabricius

By Frederick Knab, Washington, D. C.

Throughout the greater part of tropical and subtropical America *Athena chiron* is, at certain seasons, one of the most abundant butterflies. It may often be seen congregated in large numbers at puddles or wet spots of ground to sip moisture. During our stay at Cordoba, Mexico, Dr. Fenyes and the writer witnessed an extensive migration of this species. Our observations extended over four days, May 15-18, 1908, and were brought to a close by the departure of the writer. It is to be supposed that the migration continued for some time after, while the conditions prevailed which favored it. The butterflies did not form a swarm but were traveling independently. Numbers of them could be seen scattered over the countryside, many of them flying in a northeasterly direction, while others hovered about bushes and herbage or about moist places. In town they could be seen rapidly passing over, just above the roofs of the houses. There were some almost constantly in sight from our station in the courtyard of our hotel. The flights ceased during periods of cloudiness, only to be resumed when the sun again appeared.

The appearance of these butterflies at Cordoba in such large numbers was due to their sudden development in the adjoining hot, low regions as a result of the first rains of the warm season. The steady currents of heated air, passing up the mountain sides from the valley of the Rio Blanco, carried these butterflies along with them. It would therefore seem that the migration was due to natural causes rather than to any purpose or migratory instinct on the part of the insect.

Godman and Salvin observed a migration of a like character, and under similar conditions, in this same species of butterfly, near San Geronimo, in Guatemala. As their account, in the Biologia-Centrali Americana (Lepid, Rhopal., vol. I, p. 289) is accessible to but few readers, I quote it here:

"We were riding one afternoon down the mountain side skirting the plain of Salama, when we met thousands of this species, which were flying with the wind along the hillside. All were going in the same direction, which took them to the higher ranges of this district, and beyond into the valleys of the Polochic and Motagna."

Additional Notes on the Orthoptera of the Keeweenaw Bay Region of Baraga Co, Mich.

By Morgan Hebard.

In the Entomological News for September and October, 1904, Mr. J. A. G. Rehn published a paper on the Orthoptera of this region based on material which had been taken by me during the summer of 1903. Since that time, a few weeks spent in the same region* during the summers of 1904 and 1905 have netted these additional results. Mr. Rehn has kindly assisted me in the preparation of this paper.

ACRIDIDAE.

Acrydium granulatum Kirby.

July, 1904, 1905. Woods, swamps, marsh, open country. Forty-four specimens. Two approach *A. luggeri* closely.

Acrydium luggeri (Hancock).

July 30, 1904. Marshy. 1 female.

Acrydium acadicum (Scudder).

July 17, '04; on sawdust; one female; Ravine River, Mich.

July 19, '04; on pebbly bar in stream; one male; two females.

July 24, '05; marsh; 1 female. This species was always found to be scarce.

Stauroderus curtipennis (Harris).

Always very plentiful from the middle of July to the beginning of cold weather. Twenty-three specimens were taken.

Chloealtis conspersa Harris.

July 13, 14, 16, 17, 18, 25, 28, 1904. Forty-three specimens.

July 24, August 1, 1905. Eight specimens.

One female (July 17, '04) is a representative of the long-winged form *prima Morse*. The tegmina in this specimen exceed the apex of the abdomen by slightly more than the length of the pronotum. The species was found most frequently among dead leaves in openings in the woods. Many males, however, were taken about brush heaps and thickets in open pastures.

*All the specimens were taken near Pequaming, Baraga County, Michigan, unless otherwise stated.

Mecostethus gracilis (Scudder).

Twenty-four males, two females. August 1, 2, 1905.

I found these specimens in the same clearing in which I took a series of the species in 1903. Nowhere else was the species to be found. The insects were all fresh and the collecting proved that this species does not appear in any numbers until the beginning of August.

Camnula pellucida (Scudder).

This species appears about the middle of July and is plentiful in grass fields until the advent of cold weather. Twenty-one specimens were taken.

Dissosteira carolina (Linnaeus).

A common species, especially along dusty roads, appearing toward the end of July. Two specimens were taken, July 29, 1904.

Cercotettix verruculatus (Kirby).

July 16, 17, 28, 29, 30, 1904, July 24, 1905. Twenty specimens were collected, two of which were immature (July 24, '05, July 28, '04). On any warm sunny day in late July or in August many specimens of this species could be heard "crackling" about the lumber yards and town.

Podisma glacialis canadensis E. M. Walker.

Four males, three females and one nymph were taken on August 3, 1905. The insects were all taken from hazel bushes which are scattered through high pastures of the L'Anse et Vieux Desert Indian Reservation. The specimens were taken only by constant and vigorous search during the greater part of the day. The species is probably quite scarce at all times.

Melanoplus islandicus Blatchley.

July 13, 14, 16, 17, 26, 28, 30, 1904, and July 24, 1905. Thirty-eight males, thirty-nine females, two nymphs (latter both taken July 16). I did not discover the favorite habitat of this species until 1904, which accounts for my considering it very scarce in my note in Mr. Rehn's paper. It was found plentiful in but one spot about Pequaming. This was in a growth of small hardwood trees, where the series were taken in both 1904 and 1905. On the whole I should consider the

species scarce and very local in distribution, since three years' collecting in the woods about Pequaming failed to reveal but this one colony of the species, although two specimens were taken in a nearby meadow. The series is rather uniform in size, and such variation in color as exists consists chiefly in the replacing of vinaceous browns by darker tones.

Melanoplus huroni Blatchley.

One male of this species was captured in the woods on August 1, 1905, in the vicinity of the spot where *M. islandicus* was found plentiful. This species is easily the scarcest of the *Melanopli* I have collected about Pequaming.

Melanoplus extremus (Walker).

July 13, 16, 17, 28, 29, 1904, August 1, 2, 3, 1905.

Ten males, sixteen females. One male and one female belong to the long-winged type (*scandens* Scudder), while several other have the tegmina but little shorter. The specimens were taken in meadows, woods and swampy situations.

Skanee, Michigan, July 22, 26, 1904.

Five males and four females were taken in a clearing overgrown with rank grass, two miles in the woods.

The species was never found in numbers excepting in the last mentioned locality, and may be said to be a scarce species. It was found always to prefer damp meadows where grass was luxuriant and deep. The small number of specimens taken in 1903 is to be accounted for by the fact that I believed the species to prefer the upland clearings, and did not search for it in the lower meadow portions.

Melanoplus fasciatus (Walker).

July 16, 17, 30, 1904, July 24, August 1, 3, 1905. Five males, five females. One male (July 17, '04) and one female (July 24, '05) belong to the long-winged type (*volaticus* Scudder), while one female (July 30, '04) has much longer wings than the usual type. Half of the specimens are of a brownish cast, the others overclouded with blackish. The species was never found except singly, and was taken in most cases in the open, but also in meadow land and nearby situations.

Melanoplus bruneri Scudder.

Three males, one female. July 24 and August 1, 2, 1905. This interesting species was found in meadow land in rather scarce numbers.

Two males and seven females of this species taken about Pequaming on July 22, August 1, 3, 5, 6, 21 and 31, 1903, were inadvertently placed under *M. atlanis* by Mr. Rehn in his article in the Entomological News of October, 1904, the other specimens recorded being true *Melanoplus atlanis*. This is the first record of this species from Michigan, and the second record of the species from east of Minnesota, the other record being from the Muskoka Lake region, Ontario.

The females may be readily separated from males of *Melanoplus atlanis* by their more robust and less attenuate shape and wider and more abbreviated tequima. The single female captured on July 22 had but recently become adult, and the condition of the other specimens indicates that the species probably does not appear in its full strength until the beginning of August.

Melanoplus femoratus (Burmeister).

July 16, 25, 28, 1904, and August 1, 2, 1905. Seven males, three females. All of the specimens were taken in meadow lands where the species were abundant, as well as among the "brakes" on the edge of the forest.

Xiphidion fasciatum (DeGeer).

One male, one female, one nymph, taken on August 1, 1905. Plentiful in marshy places in the woods and fields.

Ceuthophilus terrestris Scudder.

July 14, 16 and 17, 1904. Taken under the same stones in the Indian war-dance ground where I took ten specimens in 1903. Thirty-four specimens of this species were collected. One specimen, taken on July 17, was captured in the act of moulting to the full imago, while another, taken on July 14, is seen to be freshly transformed from the last pupal stage, and has not taken the full coloring. Nowhere else was this species to be found, although diligent search was made.

July 28, 1904. One male of this abundant species was captured in a swampy situation.

Two Fossil Bees.

By T. D. A. COCKERELL.

The numerous bees from Baltic amber which I have recently had occasion to study, all belong to extinct genera. In this they differ from some of the other amber Hymenoptera, which belong to genera still living, e. g., *Pison, Crabro* and *Hadronotus*. The bees are believed to have arisen from the fossorial wasps, and no doubt many wasp-genera are of great antiquity. The amber insects are of Oligocene age and are *possibly* as much older than those of Florissant, as the latter are than those now living. The Florissant bees include both living and extinct genera; the latter not ancestral, apparently, to any now existing. During Miocene times, this country had a warmer climate than at present, and doubtless supported a larger insect fauna. Later, especially at the time of glaciation, the fauna must have been greatly reduced, and it appears that many genera became extinct;—some entirely so, others (as the tsetse fly) surviving on other continents. Even the warm period was probably fatal to many old American genera, because it permitted the immigration of numerous old-world forms via Alaska, and thus set up injurious competition. The details of the great Tertiary biological drama are gradually being made out through a study of the fossils, and it is becoming increasingly evident that these must be considered in connection with the living genera, in order to understand the one or the other series. Most students of recent insects have heretofore ignored the results of the palæoentomology, but it is hoped that in the future they will gladly utilize the significant facts available from this source.

PELANDRENA gen. nov.

Allied to *Andrena*, but with only two submarginal cells in the anterior wings; second submarginal broad, much contracted apically, receiving the first recurrent nervure some distance from its base, and the second at its apex; lower section of basal nervure very much longer than upper, practically straight, except at the lower (basal) end, where it is bent

to meet the transversomedial, the latter being oblique, with its lower end more apical; stigma large; marginal cell ending very obtusely, not in a point on costa, but not truncate; venation of hind wings perfectly normal for the *Andrena* series; transversomedial nervure moderately oblique.

Pelandrena reducta sp. nov.

♀. Robust, of ordinary form; length about 7 mm., anterior wing about 4 mm.; head and thorax black or nearly; abdomen and legs reddish brown; wings hyaline, becoming dusky on apical half; nervures and stigma rather light reddish brown; antennæ ordinary, flagellum 170 u. thick; hind legs with a copious and dense scopa. The following measurements of the anterior wing are in micromillimeters.

Depth of stigma 221; length of basal nervure on first discoidal (not allowing for curve) 595; length of marginal cell 1190, its breadth (depth) 340; length of first submarginal (from lower basal to upper apical corners) 714; second submarginal on marginal 357, on first discoidal 153, on third discoidal (not allowing for gentle outward curve) 442, and its outer side 187; first discoidal on third 442. Second recurrent nervure strongly bowed outward, but without any double curve.

Hab.—Miocene shales of Florissant, Colorado, Station 4 (*W. P. Cockerell.*) In my table of Florissant bees (Bull.-Mus. Comp. Zool., 1906) this runs to *Libellulapis*, but differs entirely in the shape of the second submarginal cell.

Halictus miocenicus sp. nov.

♀. Length 7 mm.; anterior wing about 4½; width of abdomen about 2 3-5 mm.; head and thorax black; abdomen and legs ferruginous; wings hyaline, slightly reddish, nervures and stigma pale ferruginous; antennæ normal, the flagellum about 2 1-5 mm. long. Head with very dense rather large punctures, so as to have a finely cancellate appearance; eyes prominent, apparently shallowly but broadly emarginate on inner side; metathorax finely granular, the sculpture finer than that of head; hind tibia and tarsi; with a very copious scopa. Venation normal for *Halictus;* second submarginal cell very narrow, receiving the first recurrent nervure near its end; third transverso-cubital without any double curve. third submarginal cell receiving second recurrent nervure somewhat beyond the beginning of its last third; stigma large; marginal cell ending in a point on costa; lower section of basal nervure very strongly curved. Venation of hind wings perfectly normal for *Halictus.*

The following measurements of the anterior wing are in micromillimeters; depth of stigma, 238; length of marginal cell 1377, its depth

357; lower section of basal nervure (not allowing for curve) 595; basal nervure apicad of transverso-medial 51; basal side of first submarginal cell 187, its lower side 731, its diameter measured from lower basal to upper apical corners 816; transverse (radial) diameter of second submarginal cell 187, its side on first discoidal 170; lower side of third submarginal 425; insertion of first to insertion of second recurrent nervures 374.

Hab.—Miocene shales of Florissant, 1908. In my table of Florissant bees (Bull-Mus. Comp. Zool. 1906) this runs to *Halictus florissantellus*, from which it differs by the broader, reddish abdomen; the light reddish nervures and stigma; the transversomedial separated from the basal nervure by a short interval, etc.

Two New Species of Coccinellidae (Coleoptera).

By F. W. Nunenmacher, Piedmont, Calif.

While working over some material collected near Goldfield, Nev., during the last year, I found two Coccinellidæ which I consider belong to undescribed species. I therefore take this opportunity to make them known.

Coccinella vandykei n. sp.

Oval, strongly convex. Head, black, finely punctate, with two yellow spots on vertex. Thorax, black, shining, a little more coarsely punctured than the head, and with a quadrate yellow spot at each anterior angle. Elytra, bright red, finely but thickly punctured, and together marked with seven black spots. These latter are arranged as follows: A common large scutellar spot, and on each elytron, a small median one near the margin, a larger discoidal close to the suture, and a third large spot, more oblong than round or oval, placed subapically and closer to the margin than the suture. Under side black, the mesosternal epimeron and the metasternal epimeron yellow, moderately coarsely punctured throughout. L. .18 to .20 inch; w. .14 to .16.

Scarce, on sage brush at 6600 feet elevation Goldfield, Nev., VI. 29, '07.

I consider this species a form intermediate between *C. 9-notata* and *C. californica*, resembling the first most with regard to the elytral markings, and the latter most with regard to the markings of the head and thorax. The scutellar spot, with regard to its size and form, also more closely resembles that on *C. californica* than that on *C. 9-notata*.

With careful collecting in the northern parts of Nevada, I believe that forms might be discovered with characters so intermediate that we would be compelled to reduce this species to a variety of *C. 9-notata*. So far no connecting links have been discovered.

Brachyacantha blaisdelli n. sp.

Oblong, not very convex. Head, yellow in the ♂, black in the ♀ and with a large yellow spot placed vertically, shining, finely but thickly punctured with very shallow punctures. Thorax of ♂, black, slightly more heavily punctured than the head, a broad yellow patch laterally, and with front and side margins lined with a narrow pale or whitish yellow band. Thorax of ♀, black, punctured as in the male, with a broad yellow patch laterally but with light marginal band only found on the side margins and ending abruptly at the front angles. Elytra, black, shining, the punctures the same as on the thorax. Each elytron with a fascia and a sub-apical spot. The fascia is placed in front of the middle, is narrowest at its outer part where it touches the margin, but on the inner edge, is dilated into an irregular rounded blotch which does not quite reach the suture and which gives off a spur that runs parallel with the suture until it joins the sub-apical spot thus forming a sort of vitta. The confluence of the spur with the sub-apical spot is found in the ♀ but not in the ♂. Under side of thorax yellow; not strongly punctured; of body, black; femur, dark; knees, tibia, and tarsi testaceous. L. .18 to .20 in inch; w. .12 to .15.

Description based upon ♂ and ♀ taken at Goldfield, Nev., VI, 29, '07, by the author. Have also several other specimens from same locality and have seen several specimens taken by Dr. F. E. Blaisdell, at Mesa Grande, Sonoma Co., Calif., and one taken by Mr. F. C. Clark at Napa, Calif.

This species is closely related to *B. dentipes* Fab, but can be readily separated from it by the following characters: the form more narrow and less convex, by *B. dentipes*, having the markings of the front and sides of the thorax of the same color, orange, while *B. blaisdelli* has them of a different color, and with the front margin narrower. The tubercles in *B. blaisdelli* are more prominent and with a greater space between them; the fourth, fifth and sixth ventral segments are depressed, and the spine of the anterior tibia is not so strongly developed as it is in *B. dentipes*.

Several New Western Jassids.

By E. D. Ball, Logan, Utah.

Platymetopius nigriviridis n. sp.

Form of *loricatus* nearly, with vertex longer in the female. Green with black markings. Elytra grayish white. Length ♀ 4.25 mm., ♂ 3.5mm.

Vertex very long and acute in the female, resembling *lautus*, twice as long as the pronotum. Pronotum short, very strongly, produced between the eyes. Elytra long and slender, appressed behind; venation slightly obscure, the central anteapical cell strongly constricted behind the middle. Front very narrow and tumid, almost triquetrus above, convex below, clypeus almost circularly expanded at the base.

Color—Vertex bright green wavily lined with black, omitting a median line on the anterior half and a pair of slightly divergent lines midway between the median line and the eyes, pale green. Pronotum green anteriorly shading out to dirty grayish white on scutellum, disc with three narrow pale stripes bordered with brownish fuscous. A broad brownish fuscous stripe behind either eye continuing along the outer margin of clavus, becoming attenuate posteriorly and often paralleled by a brownish line on disc. Veins of corium except the outer fork of the first sector irrorate or margined with brown, a black spot on the apices of the first and third apical and the first four costal veinlets. The brown markings sometimes absent from the basal half of corium. Face green, upper half of front slightly lined with black, lower half yellowish.

Genitalia—Female segment short almost truncate, median half slightly roundingly produced behind; male, valve long, posterior margin semicircular, plates narrow triangular, exceeding the valve by about its length.

Described from four species from Tia Juana, California, collected by the author.

Platymetopius nigriviridis var. **dixianus** n. var.

Form of *nigriviridis* nearly, slightly smaller and with a slightly shorter, broader vertex. Color creamy buff with a trace of greenish on tip of vertex. Vertex with the dark markings of *nigriviridis*. Slight traces of the markings of *nigriviridis* on the pronotum and apical cells of elytra.

Described from four females from St. George, Utah, collected by the author. This pretty little form from Utah's

"Dixie" was at first thought to be distinct from the California species, but what appears to be an intermediate form was taken at Colfax, California.

Platymetopius majestus n. sp.

Form of *elegans* nearly, but with a longer vertex in the male. Tawny and chestnut brown, iridescent. Length ♂ 4 mm.

Vertex, very long in the male over half longer than the pronotum, disc broad and flat the margins rounding to the rather blunt apex. Elytra moderately long and inclined to be flaring posteriorly. Venation obscure on the disc, the central anteapical cell slightly oblique and decidedly constricted behind the middle, outer anteapical cell oval, pointed in front. Front narrow slightly transversely convex, profile of upper half of face concave owing to the greatly lengthened vertex. Male, valve short broadly semicircularly rounding; plates short spoon-shaped, upturned.

Color—Vertex yellowish buff, the median suture narrowly lined with white. Pronotum brown or ashy gray. Scutellum brown with orange shadings in the angles. Elytra subhyaline washed with iridescent smoky brown omitting the sutural margin, the costal margin behind the middle and a transverse band before the apex. In one specimen the inner part of corium on the basal half, the apical band and about five reflexed veinlets are smoky black. Face and below shining black a line under the vertex margin, a broader one below it, the hind femora, and the plates white.

Described from two males from Pasadena, California, collected by the author. This is a striking species with its iridescent elytra and black face. The female will undoubtedly have an extremely long vertex.

Platymetopius frontalis var. **dorsalis** n. var.

Size and form of *frontalis*, pale fulvous washed with tawny brown. Length, 4mm.

Vertex with the margins slightly rounding, creamy yellow. Pronotum and elytra fulvous shading to tawny brown just inside the costal margins of elytra and extending forward onto pronotum. Lateral margins of pronotum, the scutellum, base of costa and sometimes a spot on clavus pale yellow. Face and below pale yellow.

Described from two specimens from Onaga, Kansas.

There are few good structural characters available in this genus and much use has been made of color and markings in defining species. This distinct variety of which several other

specimens have been seen was at first considered as a distinct species, but it possesses the same genitalia and the characteristic venation of *frontalis* and may well be an extreme color variation of that species.

Platymetopius scriptus n. sp.

Resembling *frontalis,* but with a dark face and shorter vertex. Length ♂ 3.5 mm.

Vertex intermediate in form between *frontalis* and *brevis* about one-third longer on middle than against the eye, scarcely longer than the pronotum, disc slightly convex, the margin not produced. Face short straight, elytra broad, moderately short, the anteapical cells broad and parallel margined. Male valve long, broad, roundingly pointed, plates triangular, roundingly narrowing and then slightly produced at apex.

Color—Vertex brown with a line at the apex, an oblique dash on either side, a pair of irregularly quadrate spots on the anterior disc and another pair at the base tawny white. The quadrate spots often separated by a pair of light lines. Pronotum irregularly maculate with dark brown, traces of five light stripes. Scutellum, orange and brown. Elytra heavily irrorate with smoky brown, the costa lighter, usually the black nervures are very narrowly light margined and there are a number of ivory white dots in the ends of the cells, especially towards the apex. Face heavily irrorate with dark brown, the vertex margin narrowly light, as is also a short oblique crescent on the front just beneath the apex.

Described from five specimens, all males, from Onaga, Kansas. Readily separated from *frontalis* by the dark face and from *fuscifrons* by the shorter, stouter build and the parallel anteapicals.

Platymetopius abruptus n. sp.

Resembling *frontalis,* but larger, broader, and with a dark face. Length 4.25 mm.

Vertex broad, nearly right angled, broader and shorter than in *frontalis,* a third longer than the pronotum in the female, slightly longer than the pronotum in the male, elytra broad, venation regular, the anteapical cells parallel margined, about ten reflexed veinlets to costa. Face strongly sloping; profile straight.

Color—Male heavily irrorate and reticulate with dark smoky brown above, leaving but a few small dots and reticulations of the pale ground color visible. An ivory line on apical third of vertex and a narrower one along margin. Elytra with the usual ivory white dots in the ends of the cells. Face and below heavily irrorate with dark smoky brown. The

female is much paler throughout, the pale ground color predominating over the brown reticulations. The basal half of vertex, especially against the eyes, and the base of scutellum are washed with dirty orange. The face is heavily and evenly irrorate with brown.

Genitalia—Female segment very broad and short, the lateral angles distinctly, roundingly produced, posterior margin between the angles truncate with a broad shallow median notch which is heavily black bordered; male valve large broadly roundingly pointed, plates broad abruptly rounding, only appearing as a narrow margin under the valve. Entire genitalia black.

Described for a single pair from Arizona. The female is much lighter than the male, but the structural characters are the same.

Scaphoideus bicolor n. sp.

Form and size of *fumidus* nearly, brown with the head and a broad stripe on the costa, lemon yellow. Length 4.75 mm.

Vertex, broad flat, right angled in front, slightly shorter than in *blandus*. Elytra long and narrow venation as in *blandus*, obscured by the color. Face sloping, slightly convex in profile, front very broad above rapidly narrowing to the almost parallel margined clypeus.

Color—Vertex lemon yellow, a faint black line on the anterior margin. The disc often washed with pale brown, omitting a median white line. Pronotum heavily irrorate with brown omitting a narrow anterior margin and the broad lateral margins behind the eyes. Scutellum castaneous with a broad median yellowish stripe. Elytra rich brown except for a broad lemon yellow costal stripe extending to the apical cells and a few pale spots in the cells. Face and below lemon yellow, legs and ovipositor infuscate.

Genitalia—Female segment rather long, nearly truncate posteriorly, the median half slightly rounding with a median notch either side of which appears a faint rounding projection; male, valve small triangular, plates broad at base roundingly narrowing and then attenuately produced.

Described from six specimens from Tia Juana, California, collected by the author.

Neocoelidia candida n. sp.

Resembling *lactipennis*, but longer and with a much broader head. Length 4.25 mm.

Vertex as broad as its median length, bluntly oval in front scarcely conically pointed, disc convex, rounding to the front without trace of a margin except at apex. Front tumid as in *lactipennis*, pronotum much more excavated behind than in *lactipennis*, anterior and posterior

margin parallel, lateral angles broadly rounding. Elytra broad and short, venation distinct, the outer fork of first sector usually forkin; to form a closed anteapical cell.

Color—Pale greenish white, vertex and front pale dirty straw color a black spot at apex, and sometimes a pair of quadrangular brown spots on disc. Two black points on scutellum, sometimes wanting, elytra powdered or milky white, sometimes greenish white, the nervures pale brown. Sometimes the apical cells are clouded with brown and the nervures between them are then broadly light.

Genitalia—Female segment long and narrow curved around the ovipositor, truncate posteriorly, the median half slightly angularly produced; male, valve broad at base, a little longer than its basal width apex acute, two round black spots on the disc.

Described from eight examples from the southern parts of Utah and Colorado.

Neocoelidia reticulata n. sp.

Resembling *candida* in form, smaller. Green with reticulate veined elytra. Length scarcely 4mm.

Vertex broad, slightly longer than wide, bluntly conical the disc inclined to be flat but scarcely separated from front. Elytra moderately long, slightly exceeding the abdomen, venation coarsely and irregularly reticulate. Female segment moderately long, the posterior margin broadly evenly rounding.

Color—Vertex and front pale green a black spot on apex, pronotum pale green, an oblique milky dash on either side the anterior disc. Scutellum pale green the median line milky, expanding just before the apex into a triangular spot, a pair of black points on the lateral margin. Elytra milky or greenish white, pruinose, the reticulate venation dirty greenish brown.

Described from three females from Tia Juana, California, collected by the author. Readily separated from all other species by the reticulate venation.

Neocoelidia compta n. sp.

Form of *candida* nearly, narrower with slightly longer elytra. Creamy white with three pairs of dark spots. Length 4.75 mm.

Vertex a trifle longer than its basal width, disc convex, apex distinctly conically pointed, vertex margin distinct from the eyes to apex. Pronotum rather long, parallel margined. Elytra moderately long, base of apical cells equalling the apex of ovipositor; venation obscure. Female segment very long, truncate or slightly emarginate posteriorly.

Color—Rich creamy white, a point on apex of vertex and a pair of

larger ones on scutellum shining black. A triangular mark just inside the middle of the claval area and an oblique one just before the apex of clavus extending out to inner sector of corium, dark brown. These two marks connected by a faintly outlined brown line which no doubt in darker specimens would represent the margin of a dorsal stripe.

Described from a single female from Mesilla, New Mexico (Cockerell).

Neocoelidia pulohella n. sp.

Resembling *barratti,* but with a narrower and less ornamented stripe. Elongated, pale green with a definite dorsal stripe. Length ♀, 6.25 mm.; ♂, 5.5 mm.

Vertex a trifle longer than its basal width, disc convex, apex distinctly pointed. Pronotum long, deeply and almost angularly excavated posteriorly. Elytra long and narrow, the apex of clavus equalling the apex of ovipositor, costal margin convex its entire length. Female segment long, truncate or slightly emarginate, male valve long, roundingly narrowing and acutely pointed.

Color—Pale greenish white, a broad median brown stripe extends from the black point on apex of vertex to the apex of clavus and a smoky brown stripe continues to apex of elytra. The brown stripe is margined with black from the base of the vertex back and varies in width as follows: Four regular oval enlargements on vertex, from which it regularly broadens to the base of the scutellum, then slightly narrows to the elytra, on the elytra there are three slightly angular enlargements increasing in size posteriorly. There is an irregular black spot just outside the apex of clavus on either side from which the smoky stripe takes its origin.

Described from five examples from Tia Juana, California, collected by the author. This species is much nearer to *lineata* than any other northern form.

Neocoelidia tripunctata n. sp.

Longer than *compta,* resembling *pallida,* but broader. Pale with three black spots and a median brown stripe. Length 5.25 mm.

Vertex slightly longer than wide, very bluntly conical with a trace of a carinate margin near the apex, front very broad and tumid. Elytra rather long, broad and flaring at base then narrowing to the appressed apex, giving the insect on oval appearance. Female segment moderately long, posterior margin roundingly truncate.

Color—Vertex and face creamy yellow, a large black spot on apex. Pronotum pale straw, a pair of faint brown stripes broadly margined exteriorly with milky white, scutellum milky, with a pair of shining black points. Elytra with a narrow common sutural stripe of rich brown margined either side with a broader stripe of milky white which shades out into the subhyaline white of the elytra.

Described from a single female from Arizona. A pale, but very pretty and distinct species.

A Partial List of the Lepidoptera of Pickaway County, Ohio.

By B. R. Bales, M.D.

The following list of the Lepidoptera of Pickaway County, Ohio, consists only of specimens actually taken within a radius of five miles of Circleville, the county seat, in 1907 and 1908, at odd times and spare moments in the active life of a general practitioner of medicine.

Being the list of the specimens taken in only two years, it must necessarily be incomplete, but I hope to supplement it with a further list of new specimens taken in 1909 and 1910.

Those species that I have classed as "common" or "rare," are only common or rare as I have found them in 1907 and 1908.

The collecting ground lies in the level, fertile valley of the Scioto River, and is mainly under cultivation, with an occasional tract of woodland. There are a number of small streams of varying size, near which are favorite places for both moths and butterflies. Pickaway County lies a little south of the center of Ohio.

The arrangement and sequence used by Dr. W. J. Holland in his Moth and Butterfly Books is followed, as far as possible, throughout the list.

I wish to acknowledge my indebtedness to Mr. Frank Haimbach, of Philadelphia, and Prof. Jas. S. Hine, of the Ohio State University, for kindly assistance in the identification of doubtful specimens.

RHOPALOCERA.

Anosia plexippus (Linn). Very common. An immense migrating army of this species passed through Circleville on October 4th, 1907. A record of this can be found in Entomological News, Vol. XVIII, No. 9, p. 402.

Argynnis cybele (Fab.). Common in the hay fields and meadows.

Argynnis idalia (Drury). Not common. Several taken.

Phyciodes nycteis (Doubleday & Hewitson). Not common.

Phyciodes batesi (Reakirt). Common along the small water courses.

Grapta interrogationis (Fab.) form *fabrici* (Edw.). Common.

Grapta interrogationis (Fab.) form *umbrose* (Lint.). Common.

Grapta comma (Harris), form *dryas* (Edw.). Not as common as the preceding species.

Grapta comma (Harris), form *harrisi* (Edw.). Same as the preceding.

Vanessa antiopa (Linn.). Common.

Pyrameis antiopa (Linn.). Common.

Pyrameis cardui (Linn.). Not as common as the preceding.

Pyrameis huntera (Fab.). Not common.

Junonia coenia (Hubn.). Not common. Several taken.

Basilarchia astyanax (Fab.). Common.

Basilarchia disippus (God.). Common in company with *A. plexippus* among the milk-weed blossoms.

Chlorippe celtis (Boisd. & Lec.). Common; mainly seen in open woods.

Chlorippe clyton (Boisd. & Lec.). One specimen taken.

Debis portlandia (Fab.). Fairly common in woodlands.

Neonympha eurytus (Fab.). Common in woods.

Satyrodes canthus (Boisd. & Lec.). Common in the tall grass of swampy meadows and near small streams and ditches.

Feniseca tarquinius (Fab.). Uncommon.

Chrysophanus thoe (Boisd.). Common in the tall grasses of waste fields and marshy places.

Lycaena pseudargiolus (Boisd. & Lec.). Fairly common.

Lycaena pseudargiolus (Boisd. & Lec.) form *violacea* (Edw.). Several taken.

Lycaena pseudargiolus (Boisd. & Lec.), form *neglecta* (Edw.). Several taken.

Lycaena comyntas (God.). Common at road sides, ditches and mud puddles.

Euchloe genuita (Fab.) Uncommon; two ♂ ♂ taken on April 26, 1908.

Pieris rapae (Linn.). The commonest butterfly.

Pieris protodice (Boisd. & Lec.). Common; does not appear as early in the spring as *P. rapae*.

Colias eurytheme (Boisd.). Several albinic ♀ ♀ taken.

Colias eurytheme (Boisd.), form *keewaydin* (Edw.). Fairly common; several taken.

Colias philodice (God.). Common.

Papilio ajax (Linn.), form *walshi* (Edw.). Fairly common in early spring.

Papilio ajax (Linn.), form *telamonides* (Felder). Not as common as the preceding.

Papilio ajax (Linn.), form *marcellus* (Boisd.). Common.

Papilio turnus (Linn.). Common. One taken that very closely approaches the description of *P. rutulus.*

Papilio turnus, form *glaucus* (Linn.). Not common.

Papilio cresphontes (Cramer). Common. Three full grown larvæ were brought to me on October 8, 1907. The following day, I drove out into the country to where they had been taken, and found that they had been feeding on the leaves of a small prickly ash bush in the dooryard of a farm house. The bush was almost denuded of foliage. The farmer told me that on the preceding Sunday, when he first discovered them, that he had killed "about a hundred." I found several that he had not killed and brought them away with me, with the few remaining prickly ash leaves. The leaves were soon gone, and I succeeded in raising the larvæ to maturity on the leaves of a potted orange tree. The chrysalids and imagos of those raised to maturity on orange leaves were not as large as those raised on a steady diet of prickly ash leaves.

Papilio asterias (Fab.). The commonest *Papilio.*

Papilio troilus (Linn.). Common.

Papilio philenor (Linn.). Fairly common.

Epargyreus tityrus (Fab.). Common; the larvæ are abundant on *Wisteria* and common locust.

Thorybes pylades (Scud.). Two specimens taken in woods.

Thorybes bathyllus (Smith & Abbot). Common among the red clover blossoms.

Hesperia montivaga (Reak). Large quantities of string beans are raised near Circleville for the canning factories. This species was found to be common in the bean fields where the ♀♀ may have been ovipositing. Roadside mud puddles are favorite places for this species.

Pholisora catullus (Fab.). Common at mud puddles in roads.

Thanoas brizo (Boisd. & Lec.). Took two ♂♂ and a ♀ April 26, 1908. They were feeding in company with the following species at the blossoms of spring beauties (*Claytonia virginica*) and spreading phlox (*Phlox carolina*).

Thanoas juvenalis (Fab.). Several taken.

Thanoas perseus (Scud.). Not common.

Ambliscirtes vialis (Edw.). One specimen taken in 1907.

Ancyloxypha numitor (Fab.). Very common along the grassy banks of ditches.

Polites peckius (Kirby). Common in the clover fields.

Limochores pontiac (Edw.). One ♀ taken.

Limochores taumus (Fab.). Common in fields and weedy places. They seem to be especially common about jewel weeds near streams.

Atrytone zabulon (Boisd. & Lec.). Common about blackberry blossoms in woods in the springtime.

Atrytone zabulon, Boisd. & Lec., form *pocahontas*, Scud. One specimen taken.

HETEROCERA.

Protoparce sexta (Johanssen). Very common at stramonium blossoms at twilight and at light at night.

Protoparce quinquemaculatus (Haworth). Not common.

Hyloicus chersis (Hubn.). Not common.

Sphinx jamaicensis form *geminatus* (Say). Fairly common.

Pachysphinx modesta (Har.). Not common.

Cressonia juglandis (Ab. & Sm.). Not common.

Errinyis ello (Linn.). A perfect ♀ was found on the ground, stupefied with cold, on October 5, 1907.

Haemorrhagia thysbe (Fab.). Not uncommon.

Haemorrhagia thysbe (Fab.) form *cimbiciformis* (Steph.). Not uncommon.

Pholus pandorus (Hub.). Not uncommon.

Darapsa myron (Cramer). Several taken at light.

Samia ceropia (Linn.). Very common. On May 17, 1907, while wading a swamp for birds' eggs, I saw at least one hundred and fifty cocoons of this species and several moths just out of the cocoon, on the buttonwood bushes with which the swamp is overgrown. The swamp is about one-fourth mile across and the water is from one to three feet deep, and is the nesting place of a large colony of red-winged blackbirds. King rails, Florida gallinules, least bitterns and other aquatic birds nest in this swamp, and the fact that there were so many cocoons would indicate that the larvæ are evidently not attacked much by this class of birds.

Calosamia promethia (Drury). Not common.

Actias luna (Linn.). Not uncommon.

Telea polyphemus (Cramer). Common.

Automeris io (Fab.). Common.

Anisota rubicunda (Fab.). Not common. Several taken.

Adelocephala bicolor (Harris). Several taken.

Syssphinx bisecta (Lint.). Not uncommon at light.

Citheronia regalis (Fab.). Fairly abundant.

Basilonia imperialis (Drury). Common.

Scepsis fulvicollis (Hubn.). Not uncommon.

Hypoprepia miniata (Kirby). One specimen taken at light.

Hypoprepia fucosa (Hubn.). Common at light.

Holomelina opella (Grote). One specimen taken in woods.

Holomelina immaculata (Reak). Common in waste fields and at light.

Holomelina aurantiaca var. *ferruginosa* (Walk.). One specimen taken among the grasses in a pasture field.

Utetheisa bella (Linn.). Not uncommon.

Haploa clymene (Brown). Not common.

Haploa lecontei (Boisd.), form *dyari* (Merrick). Not uncommon.

Haploa lecontei (Boisd.), form *militaris* (Harris). Common in June in woods that are overgrown with underbrush.

Haploa lecontei (Boisd.), form *vestalis* (Packard). Not uncommon.

Estigmene acraea (Drury). Common.

Estigmene congrua (Walk.). One specimen taken in woods, May 31, 1908.

Hyphantria cunea (Drury). Not uncommon at light.

Hyphantria cunea (Drury) var. *punctatissima* (Ab. & Sm.). One specimen taken.

Isia isabella (Ab. & Sm.). Very common.

Diacrisia virginica (Fab.). Common.

Diacrisia latipennis (Stretch). Not nearly as common as the preceding.

Apantesis vittata (Fab.). Common at light.

Apantesis vittata (Feb.), form *phalerata* (Harris). Not common; several specimens taken.

Apantesis arge (Drury). Uncommon. One specimen taken.

Parteuchaetias tenera (Hubn.). Common at light.

Euchaetias egle (Drury). Not uncommon.

Halisidota tessellaris (Ab. & Sm.). Fairly abundant.

Halisidota caryae (Harris). Several specimens taken.

Alypia octomaculata (Fab.). Not common. Two specimens taken.

Apatela americana (Harris). Not common.

Apatela lepusculina (Guenee). One specimen taken.

Apatela lobeliae (Guenee). One specimen taken.

Apatela albarufa (Grote). Two specimens taken.

Apatela brumosa (Guenee). One specimen taken.

Apatela oblinita (Ab. & Sm.) Common.

Perigea xanthioides (Guenee). Not uncommon at bait in late summer.

Perigea vecors (Guenee). Not common.

Hadena modica (Guenee). Taken at bait in late summer.

Hadena dubitans (Walker). Not uncommon at bait in late summer and early fall.

Hadena devastatrix (Brace). One of the earliest moths. A specimen was taken at arc light on March 27, 1908.

Euplexia lucipara (Linn.). Not uncommon at bait in late summer.

Pyrophila pyramidoides (Guenee). Common at bait.

Prodenia ornithogalli (Guenee). Common at bait.

Agrotis ypsalon (Rottemberg). Common.

Peridroma saucia (Hubn.). Common.

Noctua bicarnea (Guenee). Common at bait.

Noctua c-nigrum (Linn.). Common.

Feltia subgothica (Haworth). Common at bait.

Feltia herilis (Grote). Not as common as the preceding.

Mamestra renigera (Stephens). Common.

Heliophila unipuncta (Haworth). Common at light and at bait, where it proves itself a nuisance by often preventing the capture of rarer specimens.

Heliophila multilinea (Walker). Not uncommon at bait.

Heliophila pseudargyrea (Guenee). Not common.

Xylina unimoda (Lint.). One taken at arc light, March 27, 1908.

Cuculia asteroides (Guenee). Fairly abundant.

Papaipema nitela (Guenee). Not uncommon.

Papaipema nitela var *nebris* (Guenee). Not uncommon.

Pyrrhia umbra (Hufnagel). Not common at bait in late summer.

Eucirroedia pampina (Guenee). Several seen and taken on October 4, 1908, among hazel bushes in a rather open woods.

Scoliopteryx libatrix (Linn.). Not common. Several taken at bait in late summer.

Orthosia helva (Grote). Not uncommon at bait in late summer.

Orthosia aurantiago (Guenee). Rare. One taken at bait in late summer.

Rhodophora gaurae (Ab. & Sm.). Not uncommon at light.

Schinia thoreaui (Grt. & Rob.). One specimen taken at light.

Schinia marginata (Haworth). Common at light.

Euthisanotia unio (Hubn.). Very common in swampy meadows.

Euthisanotia grata (Fab.). A crushed specimen found under an arc light.

Cirrophanus triangulifer (Grote). One specimen taken.

Plagiomimicus pityochromus (Grote). Not uncommon.

Autographa bimaculata (Stephens). Not uncommon.

Autographa simplex (Guenee). Common.

Ogdoconta cinerola (Guenee). Not uncommon at bait.

Rivula proprinqualis (Guenee). One specimen taken.

Eustroita muscosula (Guenee). Not uncommon.

Eustroita carneola (Guenee). Common.

Galgula hepara (Guenee). Common at bait in late summer.

Galgula hepara var. *partita* (Guenee). Common at bait.

Chamrys cerintha (Treitschke). Rather abundant.

Tarache aprica (Hubn.). One specimen taken.

Homopyralis contracta (Walker). Several specimens taken.

Drasteria crassiuscula (Haworth). Very common.

Catocala vidua (Guenee). Not uncommon.

Catocala retecta (Grote). Not uncommon.

Catocala robinsoni (Grote). Not uncommon.

Catocala cara (Guenee). Very common.

Catocala amatrix (Hubn.). Common.

Catocala amatrix (Hubn.), form *nurus* (Walker). Common.

Catocala innubens (Guenee). One specimen taken.

Catocala innubens (Guenee), form *hinda* (French). One specimen taken.

Catocala piatrix (Grote). Common.

Catocala habilis, form *basilis* (Grote). One specimen taken.

Phoberia atomeris (Hubn.). More often seen early in the spring, in woods.

Parallelia bistriaris (Hubn.). Common at bait in late summer and at light earlier in the season.

Homoptera lunata (Drury). Common at bait.

Homoptera lunata, form *edusa* (Drury). Common at bait, though not so plentiful as the preceding.

Epizeuxis americalis (Guenee). Not uncommon.

Epizeuxis lubricalis (Geyer). Not uncommon.

Philometra cumelusalis (Walk.). Common.

Chytolita morbidalis (Guenee). Several taken.

Renia discoloralis (Guenee). Several taken.

Heterogramma pyramusalis (Walk.). Not uncommon.

Palthis angulalis (Hubn.). Fairly abundant.

Bomolocha baltimoralis (Guenee). Fairly common.

Bomolocha abalinealis (Walk.). Common among the grasses of fields and lawns.

Plathypena scabra (Fab.). Very common in grassy places.

Datana ministra (Drury). Common.

Nerice bidentata (Walk.) Not common.

Heterocampa umbrata (Walk.). Not common. Several taken at light.

Leptomeris quinquelinearia (Packard). Common. Specimens taken

Hemerocampa leucostigma (Ab. & Sm.). Not common.

Tolype vedella (Stoll). Seen in the fall. Not common.

Dyspteris abortivaria (Herrich-Schaeffer). Common.

Eudule mendica (Walk.). Common in woods.

Heterophleps triguttata (Herrich-Schaffer). Common in the same localities as the preceding species.

Euchoeca albovittata (Guenee). Not common.

Eustroma diversilineata (Hubn.). Not uncommon.

Mesoleuca lacustrata (Guenee). More commonly seen in the woods in the spring before the leaves are out.

Haematopis grataria (Fab.). Common.

Erastria amaturia (Hubn.). Not uncommon.

Synelys alabastaria (Hubn.). Not uncommon among the weeds and tall grasses at the edge of a swamp.

Leptomeris quinquelinearia (Packard). Common. Specimens taken in May, June and August.

Spnchlora glaucaria (Guenee). Not uncommon at light.

Orthofidonia vestaliata. Common in spring in dark moist woods.

Mellilla inextricata (Walk.). Common in woods in early spring.

Mellila chamaechrysaria (Grote). Common in woods in early spring.

Philobia enotata (Guenee). Not common. Several taken in woods in May, 1908.

Cleora pampinaria (Guenee). Taken at bait and at light.

Lycia cognotaria (Guenee). One specimen taken at light.

Therina endropiaria (Gte. & Rob.). One specimen taken at light.

Ennomos magnarius (Guenee). Common at light in the fall.

Xanthotype crocataria (Fab.). Common.

Xanthotype crocataria (Fab.), form *caelaria* (Hulst.) Not as common as the preceding.

Plagodis emargataria (Guenee). Not common.

Hyperitis amicaria (Herrich-Schaeffer). Common in woods from early April throughout the summer.

Gonodontes hypochraria (Herrich-Schaeffer). Not uncommon in the woods in June.

Euchlaena johnsonaria (Walk.). Two specimens taken.

Euchlaena pectinaris (Denis & Schiffenmuller). Not common. Taken in the deep woods in June.

Caberodes confusaria (Hubn.). Common at light and bait in late summer.

Sabulodes lorata (Grote). Not common. Several taken at light.

Sabulodes transversata (Drury). Came freely to a light in woods in late summer.

Calledapteryx dryopterata (Grote). Not uncommon.

Nigetia formosalis (Walk.). Not uncommon at bait.

Thyridopteryx ephemeraeformis (Haworth). Common.

Cossus centerensis (Lint.). A specimen, somewhat battered, was taken at light on May 26, 1908.

Sannanoides exitiosa (Say). Not uncommon about peach and apricot trees.

Geshna primordialis (Dyar). Plentiful in late summer, when it was found feeding at the blossoms of Boneset (*Eupatorium*).

Desmia funeralis (Hubn.). Common.

Blepharomastix banalis (Guenee). Common among the grasses in fields and lawns.

Crocidophora serratissimalis (Zeller). Common among the saw grasses at the edge of a swamp.

Nomophila noctuella (Denis & Schiffermuller). Common in hay fields and pastures. Comes freely to light.

Pyrausta acrimonalis (Walk.). One specimen taken.

Pyrausta oxydalis (Guenee). Not common. Several taken.

Pyrausta generosa (Grt. & Rob.). One specimen taken.

Pyrausta unimaculata (Grt. & Rob.). One specimen taken.

Eustixia pupula (Hubn.). Only one specimen of this beautiful little moth taken.

Pyralis farinalis (Linn.). Common.

Tosale oviplagalis (Walk.). One specimen taken at bait.

Crambus laqueatellus (Clemens). Common.

Crambus alboclavellus (Zeller). One specimen taken.

Crambus trisectus (Walk.). Not common.

Cenopis groteana (Fernald). One specimen taken in thick woods, May 31, 1908.

Epagoge sulphureana (Hubn.). One specimen taken.

Archips parallela (Robinson). One specimen taken.

Archips argyrospila (Walk.). One specimen taken.

Tortrix palorana (Robinson). One specimen taken.

Tortrix albicomana (Clemens). One specimen taken.

NOTE ON FOOD HABIT OF LIOTROPIS CONTAMINATUS UHL.—Professor A. E. Vinson, of Tuscon, Arizona, has recently sent me a specimen of this pentatomid, and since the food habits of the species appear not to have been recorded heretofore, it seems worth while to put on record a statement received from him concerning the occurrence of the specimen. He says it was found Jan. 28, '09, "in a fruit cluster of Opuntia fulgida about six miles east of Tucson on the S. P. R. R." The occurence of the specimen on this plant need not necessarily mean that this is the native food plant (the species even may be carnivorous), but considering the scant vegetation of the plains and the mode of occurrence it would seem quite probable that this plant is its regular habitat. The species has been collected only rarely. It was described by Professor Uhler in 1897 from specimens obtained in Arizona, and has since been mentioned but once or twice in literature. I have specimens in my collection collected by Mr. H. F. Wickham in El Paso, Texas, and Inyo Mts., Calif., the latter at elevation of 7,000 to 9,000 feet. Other members of the genus occur in the same region, and the widely distributed *L. numeralis* is a fairly common species throughout the eastern United States.—HERBERT OSBORN, Ohio State University, Feb. 2, 1909.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., APRIL, 1909.

At its meeting in Baltimore last December the Entomological Society of America passed the following resolution: "That it is the sense of this Society that the duty on insects is objectionable and should be abolished." In accordance with this resolution a suitable memorial was prepared by Mr. W. C. Wood of New York and sent to the "Ways and Means" Committee of Congress. A duty on insects is an annoyance to entomologists and serves no useful purpose. There is no element of protection to American industries in it as few imported insects are also native of this country. As a source of revenue to the Government the amount collected is so trifling as to make the collection of a tariff not worth the trouble.

Moreover it is often impossible to properly assess values on such objects. The study of entomology should be encouraged in every way possible and even the collector is an important factor in the work as his collection will be consulted by the investigator and it is not unlikely sooner or later to find its way into some scientific institution.

The dealers do not desire a duty on insects; the entomologist does not, and it is too small a matter for the Government to bother about.

THE centipede is a small creature, in spite of the fact that he is more than a six-footer.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

A SPECIES OF MOLE-CRICKET NEW TO THE UNITED STATES.—During the fall of 1906 a single mole-cricket was sent to me from Darien, Georgia. This specimen proves to be *Scapteriscus vicinus Sc.*, and is of especial interest since it is the first record of this species being found in the United States. I learned that these insects had become very prevalent during that summer and that much injury had been done by them to the golf course at Darien.—M. HEBARD.

IN a note in the March number of ENT. NEWS, page 112, Mr. Karl R. Coolidge announces, that the generic name *Pronuba* Riley is preoccupied and he proposes the name *Valentinia* Coolidge to take its place. This name would be very excellent and appropriate except for the fact that it is itself preoccupied by *Valentinia* Walsingham (Proc. U. S. Nat. Mus., xxxiii, page 200, 1907). Moreover, it has long been known that *Pronuba* was preoccupied (cf. Walsingham Ent. Mo. Mag., 39, page 260, 1903), and the generic name *Tegeticula* Zeller (1873), given to the same species, takes the place of Riley's name. There is plenty of room in the synonomy, but does the mere possession of a copy of Scudder's Nomenclator justify anyone in adding to it by proposing names in groups of which he has no special knowledge.—AUGUST BUSCK.

JOHN B. KISSENGER, of South Bend, Indiana, who, in the interest of science, submitted to the bite of a yellow fever mosquito while in the army in Cuba, and for whose relief a bill has been introduced in Congress, is now, and has been for years, almost helpless.

Kissenger, who volunteered for the experiment, was bitten by mosquitoes carrying yellow fever germs and then treated by the best medical experts in the army. It was supposed he had recovered his health and that as a result of the experiment yellow fever could be guarded against, but he later suffered a breakdown and is now a physical wreck, unable to use his feet and legs. Two others died from inoculation, and in each case the Government has given the widows pensions of $100 a month. Kissenger's friends say he is entitled to the same amount.—*The Record.*

COLEOPTERA COLLECTING BY GAS-LIGHT.—The excitement of night collecting can only be realized after one has partaken of it, descriptions fall far short of picturing the pleasure it brings or the knowledge gained by one interested in collecting insects.

During the past year Mr. H. B. Kirk, of Harrisburg, and myself have utilized many of our spare evenings and nights in this way, and it has added materially to our knowledge and collection. We start out at dusk

with our light, a gas-lamp borrowed from a bicycle; flashing it on trees and earth and many a nocturnal prowler has been taken that in daylight would have been snugly housed in some inaccessibly dark retreat. These excursions began in April and were carried on until the cool evenings made our trips useless.

Among the trips we made I will mention a few that yielded good results, although most of them brought to light many things new and interesting to us.

On the evening of April 24th while walking through a strip of woodland on the outskirts of the city we found a dog that had met an untimely end. It was alive with Diptera larvae and feeding on these were several species of Carabids and *Silpha surinamensis* Fab., the latter appeared to suck the juices from the larvae, it would take a larva in its jaws for a few moments, drop it and repeat the performance with another; we also took *S. inaequalis* Fab. and *S. surinamensis* Fab., a specimen of *Necrophorus*, Histerids, Dermestids, also *Staphylinus maculosus* Grav., *Creophilus villosus* Grav. and many other Staphylinids, all apparently feeding on the carrion.

On May 12th we found specimens of *Lachnosterna* feeding on a shrub along the park driveway in numbers so great, they resembled in the gaslight small cherry-trees laden with fruit.

June 13th we visited a grove of dead and dying hickory trees, our practice was to throw the light on the trunks of these trees, which revealed this time *Graphisurus fasciatus* DeG., whose modest coat and the fact that it remained motionless in the light made it hard to distinguish from the gray bark; we also took *Cyllene pictus* Dru. and *Neoclytus erythrocephalus* Fab. We found that in all our night collecting when the light was thrown on a tree-trunk, the insects on it would remain motionless until the light was removed, although a slight touch would cause them to drop, so we invariably used a cyanide jar for this latter purpose, touching the insect lightly with the rim of the jar, it would drop into it of its own accord.

On July 6th we visited the same grove of hickory, the night was warm and sultry and the first tree we turned our attention to was swarming with *Saperda discoidea* Fab., there they clung motionless in the cracks of the bark, probably ovipositing as they appeared to be mostly females; we took a quantity of these, the next tree yielded more *S. discoidea*, *Xylotrechus colonus* Fab. in quantity, running up and down like ants; *Neoclytus luscus* Fab. was fairly common and about one-half dozen specimens of *Distenia undata* Oliv. were taken, these trees were also infested with several species of Scolytids and two specimens of the Clerid, *Thanecroclerus sanguineus* Say. fell to our lot. Pulling the loose bark from a dead oak, *Smodicum cucujiforme* Say. was found in large numbers also several specimens of *Eupsalis minuta* Dru.

These insects were found every trip we made here until the eleventh, on this trip our hickory trees were over-run with *Clerus quadrisignatus* Say, we collected a number of them and one lively chap managed to get down between my collar and neck, I can testify that they can bite right smart.

Parandra brunnea Fab. was plentiful and a dying mulberry tree yielded *Elaphidion incertum* Newn. in quantities, we also found this species on hickory and oak.

July 19th we found a partially dead ash tree and secured a goodly number of *Tylonotus bimaculatus* Hald. that were running over the trunk, also *Neoclytus erythrocephalus* from the same tree.

On August 1st we visited an oak tree that in several places the bark had been injured, and from which sap was exuding, several species of Nitidulidae were enjoying themselves thereon, among them were *Ips obtusus* Say, *I. quadriguttatus* Fab. and *I. sanguinolentus* Oliv., a variety of other insects were also enjoying the feast; farther up on the trunk we spied several pairs of *Eburia quadrigeminata* Dru. which we added to our catch.

Many other insects were taken on these trips although the majority were Beetles, a great variety of Tenebrionidae, usually feeding on fungi, Carabids running along the paths in search of prey and several species of *Cymatodera* and other Clerids were halted on their journey by the glare of the light.

To a collector we would recommend this as a profitable means of increasing his collection and many interesting habits would be learned by one working out life histories.

We are indebted to Mr. W. S. Fisher, of Highspire, Pa., for the determination of most of the specimens mentioned in this paper.

ALFRED B. CHAMPLAIN, Harrisburg, Pa.

EVERES COMYNTAS—*amyntula.*—I am working up the distribution and specific identity of the genus *Everes,* but in coming to the American species *comyntas* and *amyntula* I find myself beset with difficulties from lack of material. The whole genus is subject to considerable variation, though within very narrow lines. Our European and Eastern species are subject to much variation, but the variations are quite small and within very restricted limits, yet they are perceptible, and in some cases have important specific bearing. In conjunction with Mr. Tutt and Dr. Chapman I have had to carefully tabulate our European and Eastern forms, and as far as possible the American species also. I notice that the variations of *comyntas* and *amyntula* are progressing very closely along similar lines, as has been the case with our *argiades* and *comyntas,* but they have not proceeded so far. The whole subject is one of considerable interest, especially when worked

out by the genitalia as I have been doing, but to clear up the American species I want a great deal of material, the variations are so small that the only safe way of coming to the correct conclusions is to obtain as large a series of each as possible, and especially in localities where the two overlap. Will American entomologists help me? I shall be glad of as large a series as possible, both from the Eastern and Western States, as also from the Central ones, I would only ask that correct localities be given, and as far as possible, dates, the latter being an important factor in the matter. I will do my best to make an adequate return, either in Palearctic butterflies or Exotic species, especially New Guinea and African.

Appeals like this often pass almost unheeded, but I trust this may not be so, and I shall be most grateful for any assistance that may be kindly given.—GEORGE T. BETHUNE-BAKER, 19 Clarendon Road, Edgbaston, England.

Doings of Societies.

A regular meeting of the Brooklyn Entomological Society was held at 55 Stuyvesant Avenue February 4, 1909, with President J. B. Smith, twenty-six members and seven visitors present.

W. Korte, 148 Dean Street, was elected an active member.

Dr. Raymond C. Osburn, of Barnard College, delivered a lecture on the life habits of the Odonata, illustrated by many lantern slides. He has observed about twenty species breeding equally well in fresh or brackish water. The limit is about one-third of the salinity of sea water. On adding salt the larvæ were observed to be greatly disturbed and soon died. The eggs of many species were shown and the embryology illustrated. The embryo turns completely around before the egg hatches. The method of copulation varies only as between the Zygoptera and Anisoptera. Larval characters and habits vary greatly among the different genera. The egg takes six days to three weeks to develop. Larval life from three months to three years. Pupation terrestrial. Respiration and transformation were fully considered.

E. L. Dickerson and John A. Grossbeck, of the New Jersey Agricultural Experiment Station, demonstrated their method of bleaching, staining and mounting lepidopterous wings for

study purposes. The wings are removed from the body and dipped in alcohol to soften them. A few minutes suffices. They are then dipped in Labaraque solution until thoroughly bleached. They are then transferred to alcohol to remove the solution. Next they are transferred to a solution of eosin, a crimson aniline dye. The time depends on the thickness of the wing. When a proper tint is obtained the wings are laid on microscopic slides with sufficient xylol balsam. A cover glass placed above them gives a permanent mount. Large wings thus mounted showed not only venation, but the circulatory tubes at junction point with body and the different muscles which carry on the flight.

Others explained that bleaching may be hastened by dipping into dilute hydrochloric acid before the Labaraque solution. Javelle water or a saturated solution of chloride of lime are substitutes for Labaraque solution.

R. P. Dow, *Recording Secretary.*

A meeting of the Entomological Section of the Academy of Natural Sciences of Philadelphia was held November 19, 1908. In the absence of the Director and the Vice-Director, Dr. D. M. Castle presided. Nine persons were present.

Mr. Matthews exhibited some brilliant moths and butterflies from India. Mr. Ilg exhibited specimens of Lepidoptera he had collected last summer in Germany.

Dr. Calvert exhibited the following Odonata: A pair of *Calopteryx apicalis* Burm. from the Great Egg Harbor River above Weymouth, New Jersey, taken August 8, 1905, remarkable for their size (abdomen ♂ 32, ♀ 30.5 mm., hind wing ♂ 23, ♀ 25 mm.); a female *Gomphus parvulus* Selys. from Mt. Pocono, Monroe County, Pennsylvania, June 13, 1906, by Mrs. Calvert; this species was recorded from Berks and York Counties by Hagen in 1875, but since that time has not been mentioned from the eastern part of Pennsylvania; *Enallagma geminatum* Kellicott ♀ from Philadelphia, and *E. traviatum* Selys. from Clementon, New Jersey, June 4, 1908.

Mr. Daecke said he had taken *Hetaerina american* at a num-

ber of localities in New Jersey, and they were smaller than Pennsylvania specimens.

Mr. Rehn exhibited specimens of three species of Orthoptera, one a walking-stick and two grasshoppers, which were found inhabiting the grease-wood, a creosote bush of the southwestern deserts. The speaker, with the aid of a map, showed the distribution of the plant, and stated that in addition to the species exhibited another rare grasshopper, *Clematodes larraea*, which has been taken only on this food plant. The same speaker exhibited several species of Orthoptera which frequented the rabbit-weed of portions of the desert plains.

Mr. Daecke said that on May 28th he had exhibited a living antlion larva and again brought it to the meeting this evening, as it was still alive and in good condition.

Dr. Skinner exhibited a series of *Argynnis platina* and *snyderi* captured at Provo, Utah, by Tom Spalding. The constant differences between the species were pointed out.

Dr. Castle said he had received some *Donacia* packed in cotton and they were infested by *Anthrenus*. He put them in the oven and forgot them and they remained twenty-eight hours. The color had changed to a bright metallic green.

Mr. F. J. Kelley was elected an associate.

HENRY SKINNER, *Recorder.*

A meeting of the Entomological Section was held December 17, 1908. In the absence of the Director and Vice-Director, Dr. D. M. Castle presided. Twelve persons present.

Dr. Calvert said he had brought to him a ball five inches in diameter, composed largely of grain matted together. It was taken from the stomach of a calf. It had been infested by a species of grain moth and large numbers had been killed by bisulphide of carbon.

Mr. Weigand exhibited the *Cucullia* he had captured in Fairmount Park, Philadelphia which had been described as new by Professor Smith.

Mr. Haimbach said cattle collect a large amount of hair in their stomachs in licking off the eggs of the warble-fly.

The following were elected to serve as officers for 1909:
Director, Philip Laurent.
Vice-Director, H. W. Wenzel.
Treasurer, E. T. Cresson.
Conservator, Henry Skinner.
Secretary, E. T. Cresson, Jr.
Publication Committee, E. T. Cresson, E. T. Cresson, Jr.

HENRY SKINNER, *Recorder.*

A meeting of the Entomological Section of the Academy of Natural Sciences of Philadelphia was held January 28, 1909, Mr. Philip Laurent, Director, presiding. Nine persons were present.

Dr. Henry Fox made a communication on observations made in northern Cape May County, New Jersey, to determine occurrence, abundance and distribution of species of *Cicindela* with reference to the physical features of the district. These features are grouped under four headings, as follows: Barren Beaches, Maritime Marshes, Interior Uplands and Cedar Swamps. In some cases these may be subdivided into minor areas, each characterized by its peculiar species of the genus. Ten species were collected in this area during the summer and early fall of 1908, as follows: *Dorsalis, lepida, hirticollis, repanda, punctulata, marginata, vulgaris, purpurea, modesta, generosa. C. dorsalis,* characteristic of the lower strand of the barrier beach, is exceedingly abundant in midsummer, scarcer in early fall. In September, 1907, it was much more abundant, owing probably to the lateness of the warm season of that year.

C. lepida rare. Occurs on dry sand of upper beach. *Hirticollis,* characteristic of the upper beach, where *Cakile edentula* forms a characteristic plant. *Repanda* rare in early summer, abundant in early fall. Found in interior uplands and on the sand dunes of barrier beaches. *Punctulata,* the common summer species of the interior uplands. Scarcer in early fall. *Marginata* is characteristic of the mud-flats of the maritime marshes. Some individuals were seen on the lower beach associated with *dorsalis,* but rare there.

Vulgaris, purpurea, modesta, were not seen during greater part of summer, but appeared in swarms in early September, when they frequent the sand roads of the pine barrens in the interior uplands. *C. generosa* appeared in early fall—only a few captured in early September.

Mr. George Greene said *marginata* had been found on the light sand at Avalon. C. Greene and Harbeck at same place had found *dorsalis* attracted to decayed meat.

Dr. Castle said he had seen *marginata* right on the beach at Tybee Island.

Dr. Calvert exhibited a pair of *Calopteryx apicalis* Burmeister, recently given to him by Provost Philip R. Uhler. They are labeled "Penn"(sylvania) and the male also bears the letter "H" and a number. Provost Uhler had told the speaker that the latter label indicates that the specimen had been taken at or near the residence of the late Professor Haldeman, Columbia, Lancaster County, Pennsylvania. This is the first record of this species in Pennsylvania known to the speaker other than Hagen's and his own statements that Burmeister's types and a pair from Uhler come from Philadelphia, although, curiously enough, Burmeister's original description states of this species "Vaterland unbekannt."

HENRY SKINNER, *Recorder.*

At a regular meeting of the Feldman Collecting Social, held February 17, 1909, at 1523 South Thirteenth Street, Philadelphia, twelve members were present. President Harbeck in the chair.

The members had a long discussion on the giving out of manuscript names, a practice which was condemned by all.

Professor Smith said, in continuation of his communication of last meeting, that over 2000 nests of Brown Tail Moth had been found in New York. In New Jersey only a few and not bulk of the importations have been examined and about fifty so far were found; has extended south to Virginia and west to Ohio—has been found in Pennsylvania at Meehan's Nurseries. Egg masses of the Gypsy Moth were also found in Ohio. In

European countries the number of moths is terrific. It is almost impossible to keep track of the nursery shipments and where they come from, as the Custom House officials pass the packages without remarking on their contents. Discussed by the members. Professor Smith said, upon inquiry, the species was widely distributed in Europe and Asia. It has been established here about fifteen years and the Gypsy Moth longer.

Mr. Wenzel exhibited his collection of Cryptocephalinae, *Phaeneus* and other groups, pointing out many new and interesting species. Also said that *Dendroctonus frontalis* Zimm., which did so much damage in West Virginia and was finally wiped out, has made its appearance in Virginia.

Mr. C. T. Greene exhibited the following species of Diptera: *Tachydromia fenestrata* Say, *Pipiza radicum* W. & R. and *Chilosia similis* Coq.

Professor Smith said Cecropia cocoons were exceedingly scarce in New Jersey and Long Island—where in former years hundreds could be collected, now only a few can be found. Mr. Wenzel said he had noticed the scarcity in this neighborhood.

GEORGE M. GREENE, *Secretary.*

A meeting of the Newark Entomological Society was held in Turn Hall on December 13, 1908. President Wormsbacher was in the chair and thirteen members were present.

The election of officers for the ensuing year (1909) resulted as follows:

President, Henry Wormsbacher, re-elected.
Vice-President, Edwin Bischoff.
Secretary, John A. Grossbeck, re-elected.
Financial Secretary, H. H. Brehme, re-elected.
Treasurer, George J. Keller.
Librarian, William H. Broadwell, re-elected.

Mr. Bischoff spoke at length on the habits of the Scolytid beetles and their near relatives and exhibited two boxes of specimens representing nearly all the species occurring in New Jersey. He remarked on the ability of certain species when

pursued to bore into the heart of the tree so rapidly as to almost defy capture; also on the sense by which they are enabled to locate trees soon after being felled. The perspiration of the human body serves to attract them in no slight degree, and especially is this so at the approach of dusk.

Mr. Buchholz stated that numerous specimens of a *Prionus* are sometimes present on the walks in Arizona, where their dead bodies frequently render the pavements slippery.

Mr. Bischoff said that he found many larvæ of *Lucanus dama* boring into the roots of an unidentified tree. They were present throughout the roots as far into their ramifications as their thickness would allow.

Mr. Brehme read a paper on his experience in collecting dragon-fly larvæ. In his search for mosquito larvæ he discovered several small depressions in the bed of a flowing stream, and in these hundreds of specimens were taken in a few hours. In one instance eleven examples were secured with a single dip of a small hand net.

JOHN A. GROSSBECK, *Secretary.*

The January meeting of the Newark Entomological Society was held at Turn Hall on January 10, 1908, with seventeen members present.

Mr. Grossbeck spoke on the life habits of dragon-flies in general. He believed that the large eyes of the nymphs served as little more than cases for the developing compound eyes of the adult, since experiments carried on by him showed that they were unable to differentiate between the animate and inanimate and repeatedly grasped small sticks and leaves twirled near them with a medicine dropper. A small Curculionid beetle was struck at whenever it was forced within reach of the extensile labium, but as soon as it was stunned and remained quiet it was left unmolested, though put directly against the jaws of the nymph; again, the beetle recovering, it was immediately snatched.

Supplemental to Mr. Grossbeck's remarks Professor Smith outlined the peculiar manner in which copulation was effected.

He also spoke on the antiquity of the dragon-flies and the enormous size attained by some of the primitive species.

Mr. Bischoff exhibited his collection of Cicindelidæ and remarked on the habits of some of the species. Among the New Jersey species were two specimens of *C. consentanea* taken at Lakehurst on July 4th.

Mr. Wormsbacher showed a cocoon of *Tropaca luna* which contained two pupæ.

JOHN A. GROSSBECK, *Secretary.*

The February meeting of the Newark Entomological Society was held February 14, 1908, with twenty members present.

Mr. Buchholz spoke on the genus *Eubaphe* and exhibited his collection, which contained nearly all the North American species. His remarks were confined chiefly to the constancy and variation of the different species and the regions in which they respectively occurred. A specimen of *E. opella* var. *nigricans* was shown which was taken at Jamesburg on July 4th. Mr. Grossbeck also had two specimens of this variety taken at Milltown on July 7th.

Professor Smith's collection of *Eubaphe* also contained nearly all the described species. He expressed a doubt as to the rank of some of the supposed varieties of *aurantiaca*, believing some might be proved to represent distinct species by rearing.

Mr. Buchholz said he expected to raise the local species this coming summer.

Mr. Grossbeck showed bred specimens of *Tholeria reversalis* Gn. The larvæ occurred in numbers on Common Wild Indigo (Baptisia tinctoria).

JOHN A. GROSSBECK, *Secretary.*

A meeting of the Rhode Island Entomological Society was held in the offices of the Providence Forestry Company on January 25, 1909, at 8 o'clock.

In the absence of President Reynolds, Vice-President Kingsford took the chair until the arrival of the President.

After the minutes of the previous meeting had been read and

approved, Mr. E. H. Armstrong, through whose courtesy the society is allowed to meet in the offices of the Providence Forestry Company, presented the society with a year's subscription to the ENTOMOLOGICAL NEWS, Canadian Entomologist and a continuous subscription to "Seitz's Macrolepidoptera of the World."

It was voted by a quorum of the original Rhode Island Entomological Society that all money in the hands of the treasurer of that society be turned over to the treasurer of the present society, Mr. Eddy.

A new member, Mr. Simmonds, was admitted to the society. He exhibited a fine specimen of *Plusia balluca* which was greatly admired.

Mr. Nyler exhibited the hibernating larvæ and cases of *Acinnus melsheimeri.*

Mr. Billson exhibited a number of fine specimens of *Noctuidae, Geometridae* and *Notodontidae.*

It was voted that all members bring a check list of all their *Rhopalocera* at the next meeting.

After looking at a series of slides through Mr. Armstrong's microscope the meeting adjourned.

WILLIAM PLACE, JR., *Secretary.*

A meeting of the Rhode Island Entomological Society was held in the offices of the Providence Forestry Company, February 8, 1909, at 8 o'clock. Eight members were present.

In the absence of President Reynolds, Vice-President Kingsford called the meeting to order.

After the minutes of the previous meeting had been read and approved, the Secretary read a letter from Dr. Skinner, extending his best wishes to the new society.

The treasurer then reported that he had collected the money remaining in the treasury of the original Rhode Island Entomological Society, as had been voted at the previous meeting, the amount being $3.68.

A new member, Mr. C. H. Luther, of Providence, was admitted.

A vote for the adoption of a check list was taken, which resulted in favor of Dyar's.

After a social talk on subjects pertaining to entomology the meeting adjourned.

WILLIAM PLACE, JR., *Secretary.*

The January, 1909, meeting of the Heink Entomological Club, St. Louis, Mo., occurred at the residence of Mr. Charles L. Heink, who presided. Mr. William R. Schneider was a visitor, and toward the close of the session was unanimously elected to membership.

Mr. Knetzger exhibited a specimen of *Euchistus servus,* which flew into an open window, settling on his dining table, on January 3d. He also showed a number of freaks, including *Pyrameis cardui,* supposed to be var. *elymi; Lycaena comyntas* ♀ with irregular pale blue blotches on the wings; *Euphyes verna* with lunate indentations in the margins of the wings, the fringe accurately following the indentations, and a *Phyciodes nycteis* of very pale color, suggesting albinism.

Mr. Heink displayed *Catocala junctura,* taken at Cliff Cave, Mo., a new record for this vicinity; also specimens of *Apantesis persephone, anna* and *figurata,* all taken here.

Mr. Schroers showed a live young grasshopper taken at Creve Coeur Lake, Mo., January 22d. He reported capturing a noctuid the same day, which, however, managed to escape.

Mr. Schneider entertained the members with interesting reminiscences of his early collecting days in St. Louis, at a time when a man with a collecting outfit was considered "bug house, sure enough."

The February, 1909, meeting of the Heink Entomological Club occurred on the 21st, Mr. Heink presiding. Mr. George Hosenfeldt was a visitor.

Mr. Schroers showed a specimen of *Ampelophaga cnotus,* taken at Creve Coeur Lake, Mo., June 11, 1908; also a series of *Pholus achemon,* showing considerable variation in the shading of colors; *Pholus lycaon* and *pandorus;* a fine pair of *Hypna epigena* and *Anaea troglodyta* var. *cubana* from Cuba.

Mr. Hosenfeldt exhibited his celebrated five-winged *Samia cecropia*. This is a large and fully developed specimen, with all wings perfect. The extra wing is a hind wing on the left side, being fully as large as its twin, each of the twins, however, being slightly smaller than the normal hind wing on the right side. He also showed a melanic specimen of what is presumed to be *Pieris oleracea*, taken at Horse Shoe Lake, Ill.: and a fine specimen of *Calephelis borealis*, taken at Cliff Cave, Mo., and probably marking a new record for this vicinity.

Mr. Heink exhibited an interesting variation of *Lycaena lucia* and a new *Phyciodes*, which he has not yet had determined.

AUG. KNETZGER, *Secretary.*

A regular meeting of the Entomological Section, Chicago Academy of Science was held Feb. 18th at the John Crerar Library. Attendance eight. Messrs. Healy, Liljeblad, Beer, Neubarth and Kwiat exhibited their collections of *Heliothis*, *Schinia* and allied genera and compared notes. Beginning with *Ipimorpha* the species reported as having been taken locally, are as follows: *Ipimorpha pleonectusa, Chloridea virescens, Heliocheilus paradoxus, Heliothis armiger, H. umbrosus, H. phlogophagus* (Healy 1, Kwiat 1), *Alaria gaurae, A. florida, Schinia trifascia, S. mundina* (Healy 1), *S. lynx, S. sanguinea* (Kwiat 1), *S. jaguarina* (Neubarth 1), *S. arcifera, S. spraguei, Lygranthoecia bicuspida* (?) (Kwiat 1, Beer 1), *L. marginata, L. imperspicua, L. constricta* (Healy 1), *L. brevis, Heliolonche indiana* Sm.

Mr. Kwiat also reported that *Trileuca gulnare*, described by Strecker as *Schinia gulnare* from Illinois, was first taken by Vollbrecht at Starved Rock, which is about 100 miles from Chicago on the Illinois River. The specimen is now in the Strecker Collection at the Field Museum in Jackson Park, Chicago.

It was decided to take up the succeeding genera of Lepidoptera to and including *Anomis*, at the March meeting.

A. KWIAT, *Recorder.*

EXCHANGES.

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☞ These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.

Wanted for cash or exchange Meloidae, especially of genus *Meloe*, from North America north of Mexico.—R. W. Dawson, Dept. Ent., Univ. of Neb., Lincoln, Nebraska.

Lepidoptera.—I would like to correspond with those who expect to collect for cash in new and little known regions, South and West, during the coming season.—John L. Healy, 312 City Hall, Chicago, Ill.

I'll be happy in corresponding and exchanging papers and material of study with economic entomologists, and especially with Miriopodologists and Acarologists.—Prof. Carlos E. Porter, Casilla 2352, Santiago, Chile.

Some Entomological Literature for exchange.—M. Bubna, 2629 Woodhill Rd., Cleveland, Ohio.

Wanted for Cash or Exchange.—Cocoons and pupae: *Pap. ajax, troiulus, cresphontes, achemon, turnus* and other *Papilio. T. modesta, H. chersis, luscitiosa, A. bicolor, angelica, P. pandorus, Dar. versicolor, Cal. astylus, Cit. regalis, imperialis, hylacus, luna, polyphemus, Lapara coniferarum, C. nudulosa, S. germinatus, Paonias myops, P. quinquanmaculata, Attacus cecropia, jorulla, orizaba. angulifera* and all other species of *Attacus.*—Joseph Sever, 335 E. 49th St., New York City.

Cordalis cornuta larvae.—I desire to purchase in quantity "dobsons" in alcohol or formaline, or preferably in chloral hydrate (see Comstock and Kellogg, Insect Anatomy, p. 29). Please state price desired.—J. F. Abbott, Washington University, St. Louis, Mo.

Wanted—Two male and two female *Argynnis diana* with data. Fresh perfect specimens only. Will pay cash.—William Place, Jr., 13 Parkis Ave., Providence, R. I.

Bred specimens of *Anaea andria* in papers and of *Catocala illecta* on pins. Other Catocalae, *Papilio cresphontes* and pupae of Papilios, Sphinges and Bombycids for exchange.—R. R. Rowley, Louisiana, Mo.

Complete lists of North American insects of all orders for exchange, furnished on application.—Charles H. Withington, Kansas University, Lawrence, Kansas.

For exchange—Mexican moths, principally Sphingidae; wish the larger western butterflies in exchange.—W. R. Walton, 810 N. 18th St., Harrisburg, Pa.

Italian Macro Lepidoptera.—Perfect spread specimens accurately determined are offered in exchange for North American Macro Lepidoptera.—Giacinto Gianelli, Rivoli, Tornise, Italy.

Wanted.—*Elateridae* and *Buprestidae* from all parts of North America. Will give in exchange named Coleoptera and Lepidoptera (diurnals, in papers).—C. O. Houghton, Delaware College, Newark, Delaware.

Wanted for Cash.—Insect Life, Vol. ii, Nos. 2, 5, 11, 12; Vol. iii, Nos. 11, 12. Psyche, Vol. xii, No. 2. Fntomological News, Vol. xv, No. 4. State price.—Wm. S. Marshall, 116 E. Gorham Street, Madison, Wis.

I have for exchange cocoons and pupae of *tityrus, D. myron, A. actomaculata, P. sexta, Ph. achemon.* Wish to exchange with collectors from California, Arizona and New Mexico. Also material from Europe and other duplicates. "Skeemers are not wanted."—J. N. Lang, 104 Bunker St., Chicago, Ill.

I am looking for extra large expanse Lepidoptera, especially Saturnians and Sphinges. Let me know expanse and price.—C. V. Blackburn, Stoneham, Mass., U. S. A.

All kinds of Moths and Butterflies to exchange for American species not in my collection. Sent lists to Joseph H. Reading, 775 N. Rockwell St., Chicago, Ill.

For exchange—Geological and duplicate entomological publications or other literature treating of insects. Lists furnished.—E. S. Tucker, Box 208, Dallas, Texas.

I have *Parn. apollo, delius, mnemosye, Arg. aglaia, adippe, lathonia, Sat. circe, hermione, alliona, Apatura ilia, clytie, Lim. populi*, Indian exotics, rarest Eupitheciae (bred). Wanted cocoons *cecropia, angulifera*, etc., *asterias, ajax, zolicaon*, etc. Catocalae eggs.—J. W. H. Harrison, 181 Abingdon Rd., Middlesbro', England.

Wanted—Pupae of Papilios, Argynnis, etc., also of certain Sphinges, in exchange for specimens in papers.—C. H. Bode, 2005 Carson Street, Pittsburg, Pa.

I have for exchange cocoons of *T. polyphemus*, pupae of *Od. carmelita, Bist. strataria* and *Selenia tetralunaria*. Send exchange list.—J. J. Henneberger, 10114 Ewing Ave., Chicago, Ills.

Wanted.—Entomological News, Vol. X, No. 10.—G. W. J. Angell, 235 W. 76th St., New York.

Lepidoptera Wanted.—*Argynnis diana*, male and female, by purchase or exchange.—H. S. Gladwin, Madison, New Jersey.

I want Riley's Ninth Missouri Report. Will pay cash or exchange, literature or Lepidoptera I also desire to correspond with collectors possessing "freak" Lepidoptera with purpose of photographing same for study.—H. H. Newcomb, 43 Tremont St., Boston, Mass.

I wish to exchange the Hemiptera of the world, Heteroptera and Homoptera, and will give in return species from Hungary correctly named.—Robert Meusel, Janospuszta bei Szokolya Hont-megye, Ungarn.

For exchange.—Rare Lepidoptera and Coleoptera from Arizona for Entomological Literature.—V. W. Owen, Clerk's Office, U. S. Courts, Los Angeles, Cal.

I collect in all orders for cash. Price lists Coleoptera, Hemiptera, Hymenoptera for 2c. stamp. Positively no exchange.—A. H. Manee, Southern Pines, N. C.

Am back on the farm again and would be pleased to collect insects in any order in exchange for Coleoptera and Hemiptera, for my collection, or literature on these orders. Meloidae, Coccinellidae and Membracidae especially wanted.—W. E. Snyder, Beaver Dam, Wisconsin.

Wanted for cash, named or unnamed material in the Trogositidae of United States, Canada and northern Mexico. Dates desirable. Locality must be guaranteed. Information regarding life habits appreciated. Write, stating particulars and prices.—R. P. Dow, 15 Broad Street, New York City.

Lepidoptera—I have for exchange bred specimen of *D. portlandia, A. andria, E. deflorata, P. ajax* and others.—Chas. L. Heink, 4320 N. 11th St., St. Louis, Mo.

I desire to exchange with collectors of Lepidoptera in Florida, Ariz. and Nevada, also South America, India and Japan. Send lists to A. F. Porter, Decorah, Iowa, U. S. A.

Following bred Catocalae—I hope in coming season give in exchange *fraxini, sponsa, nupta, elocata, electa, dilecta, conjuncta, promissa, puerpera, pacta, optata, fulminea, conversa, nymphagoga*. Would like American Catocalae only, the same first-class quality.—G. Eberhard, Berlin Friedenau, Beckerstr. i. Germany.

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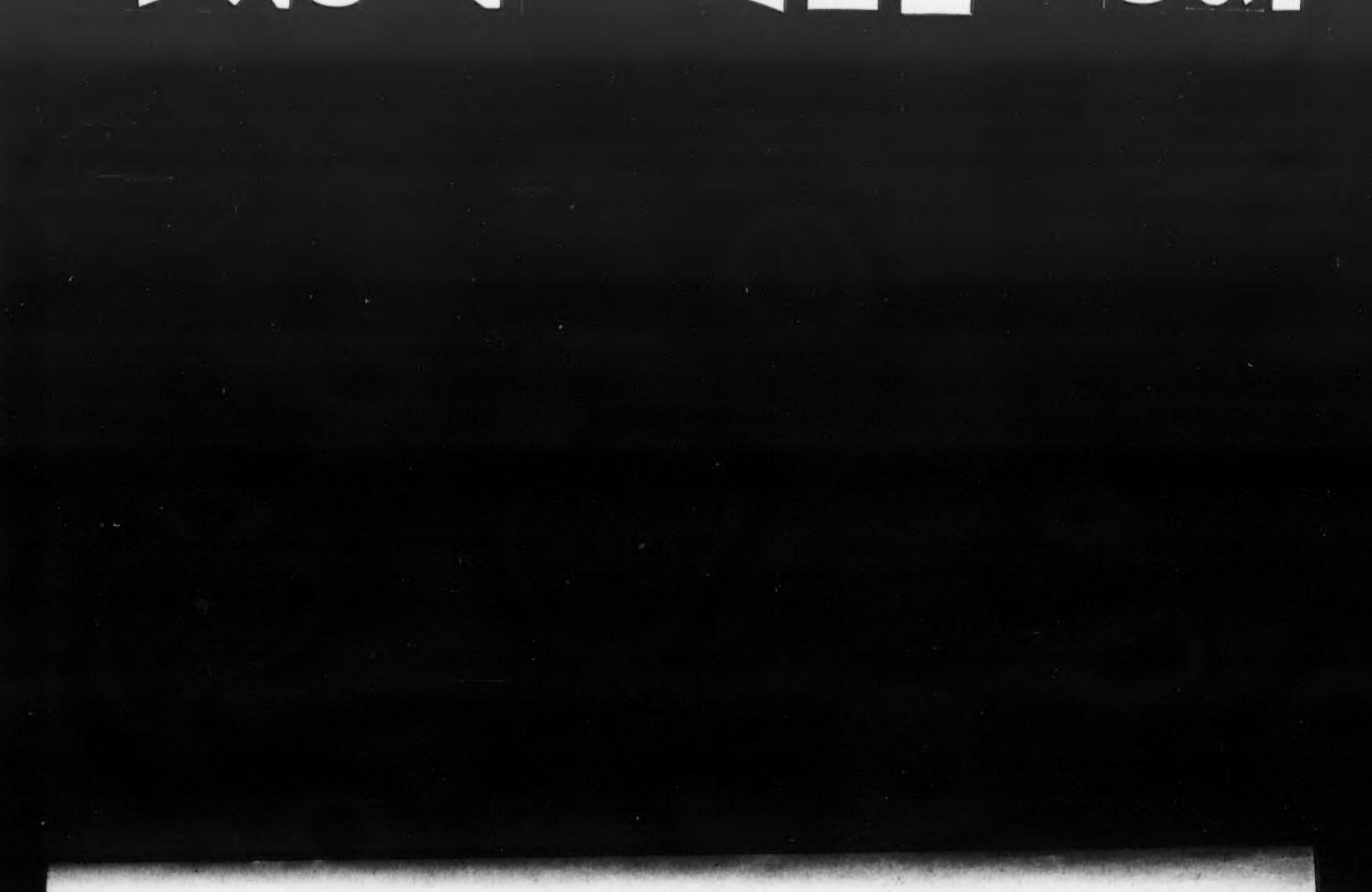
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